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A JOURNAL
 DEVOTED
 TO BEES
 AND HONEY
 AND HOME
 INTERESTS.

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FROM DR. C. C. MILLER.

FOREIGN BEE-JOURNALS are gaining appreciation. *Review* is to have them culled by R. L. Taylor, assisted by his niece.

DR. TINKER says queenless black bees will eat eggs given them. Won't Italians, Dr. T.? But sometimes they don't.

IS ANY VENTILATION of hives better than the old-fashioned way of raising the hive by a block under each corner in summer?

I'M GLAD to have Doolittle confirm my opinion that a laying queen can get through as small a perforation as when a virgin.

"OLIVER FOSTER dropped the supply business because he could make more money raising honey. That is encouraging."—B. K. *Review*.

WEATHER here would rejoice first page of B. B. J. May 17, A. M., 92° in shade; P. M., big hailstorm; next morning, snowstorm and down to 36°.

MENTAL OVERWORK and worry seems to have shortened Mr. Corneil's days. Many of us may take warning. Mr. Corneil's loss is felt outside of Canada.

A SPLENDID PLACE to keep combs is under a hive containing a colony of bees. They'll take care of them, even if not obliged to go down through the combs.

THAT LATEST CRANE smoker, with its accurately fitting, lightning-shutting nozzle, solid bolts, and corrugated outside—what other improvement is left to dream over?

EXPERIMENTER TAYLOR (*Review*) thinks moisture in cellar does no great harm to strong colonies; also that sealed covers do no great harm with big ventilation below.

THE BEST FOUNDATION, according to Gravenhorst, should not have the thin and exactly six-sided edges of walls we are accustomed to see, but thickened and round, as the bees make them.

THAT TROUBLE about mistaken identity of queens that Mrs. Atchley tells about on p. 452 would not occur if queens were clipped. [That's so; but beginners seldom clip, because they are too awkward.—Ed.]

TOOK OUT my bees from cellar April 18; all but 10 taken out March 17, and 20 April 25. As nearly as I can make out by the last of May, it would have been some loss if I had taken all out in March.

THE CANADIAN government is to establish a department of apiculture at the experiment farm at Ottawa, and the publication of a French bee-journal for Canadians is in contemplation, says M. Benoit, in *Bulletin du Tarn*.

IN ENGLAND small hives are in favor. The standard frame is 14½x8, 72 per cent as large as Simplicity; 10 or 11 frames are used, 11 being hardly as much as 8 Simplicities. [Yes, yes; here is a pointer in favor of the smaller hives.—Ed.]

M. M. BALDRIDGE gives in *Review* a management of foul brood worth considering. This and some other things, to change Hutchinson's words, makes it seem "to be one of those cases in which you ought to be a subscriber to" *Review*.

WHEN EMMA saw the new Crane smoker she said, "Now you'll not be always losing your nozzle." To which unkind insinuation I made no reply. [The nozzle was not hinged to prevent losing it, but to facilitate filling and to obviate burning fingers in handling a loose top.—Ed.]

MR. L. O. HOWARD succeeds Prof. Riley as chief of entomology at Washington. The *Chicago Record* says Howard "has been the mainstay of that branch of the service for several years, and is the author of a large portion of the publications which bear Prof. Riley's name."

PREVENTION of after-swarming. Here's a good plan from Frank Coverdale, in *A. B. J.* Put the newly hived swarm side by side with old hive; close entrance of old hive, and put in its side next to new hive a cone escape, and in

two weeks put the old hive on new stand, giving it a queen or cell. Too long a wait, though.

M. M. BALDRIDGE says in a very positive manner, in *A. B. J.*, that Mahan was not the first to import Italian bees, and quotes Langstroth to prove that bees belonging to Wagner, Colvin, and Langstroth, preceded those of Mahan. Baldrige seems to know what he is talking about.

GRAVENHORST says that, although so many foundation-presses are in use in Germany, they are used only by those who make for themselves. Hot wax poured into the presses makes the foundation brittle, and unfit for shipping, so the foundation of commerce is made on mills. [We infer that the hot-wax home-made foundation is not as good because of its brittleness. —Ed.]

B. TAYLOR (*Review*) thinks my plan of having sections cleaned by allowing entrance to them for one bee at a time makes them sting every thing in sight. (Taylor, you're a—a—well, just wait till I see you.) His plan is just the opposite. Give full access to top and bottom, and have sections enough for all. The philosophy is the same. I have few bees in proportion to the honey; he has much honey for the bees. With enough sections I believe his plan's best.

I'LL CRIPPLE that printer that put "not" in 11th line, p. 454. The comparative merits of T supers and wide frames is one of the few things I do know about, and then to have him put in a fiendish "not"! Or, say, did I put it in? [Our mistake, Doctor. By the way, what a pity it is that we can not take that word which we did not want, and give it to Bro. York to put in the first line on page 648 of his issue for May 24! Bro. Y. never meant to say that "the bee-keeping world can spare Dr. Miller just yet." It's a naughty *not*.—Ed.]

A WRITER in *Success*, also one in *American B. K.*, credits me with being "Somnambulist" of *Progressive*. Quite a compliment, but you must guess again, friends. My trouble's the other way. I've too hard work getting asleep to fool away my time tramping around after I get to sleep. [If you can't sleep, no wonder. You have been threatened with brain trouble. Make the brain work less during the day and it will work less at night, is the advice of the editor, who speaks for his readers, we are sure. Get on to that bicycle and you will sleep. Try it and see.—Ed.]

I DON'T PAINT hive-bodies, because paint won't let moisture out through the walls. Painted covers won't let moisture in. Without paint, the cover warps; the body doesn't. [How do you *know* moisture will go through unpainted hive-sides? We haven't any positive knowledge on this point, but strongly *suspect* that there would be no practical difference regarding this moisture passing between the painted

and unpainted sides. On the other hand, we do know that the unpainted hive-bodies won't last nearly as long; and, besides, will fail to be bee-tight sooner or later.—Ed.]

[The following were received shortly after the foregoing came to hand. We suppose the doctor thought they were too long to be called "Straws," hence he calls them "Overgrown Straws."—Ed.]

TRY THIS. Beat up an egg in a tea-cup, yolk and white; put in sugar and cream proper for a cup of coffee, then fill up with boiling coffee. Some don't like it, and some are very fond it. It's nourishing, and easy of digestion.

TRY BUTTERMILK, friend Root, in your "rotation" of diet. There are cases in which buttermilk does a good deal better than sweet milk. I've been using it a good deal lately, and, although I'm inclined to "sour stomach," it seems to agree better than sweet milk. A glass of cold sour buttermilk sweetened, with a very little dissolved saleratus rapidly stirred in, makes an effervescing drink that is very refreshing. It's food, and should be taken about meal time.

THE WOMEN-FOLKS, and sometimes the men-folks, make an awkward job of planting in the ground plants in pots. Here's a good way: Dig a hole deep enough, and plant pot and all. Pack the earth firmly and closely about the pot, having the surface of the earth in the pot on a level with the surface outside. Now lift out the pot carefully, turn it upside down, knock the now under rim of the pot upon the top of a box or something solid, when, if the ground is not too wet, it will fall out in a compact ball. Set this in the hole, jab your trowel all around it, pack the ground, water it, and sprinkle dry earth on top.

BITS OF COMB attached to separators, as mentioned in sixth item on p. 470, I suspect, is a different thing from the trouble mentioned by P. W., p. 469. Your answer to P. W. is all right, and I may add that I have no trouble of that kind since using bottom starters. He'll find the trouble worse when storing is slow. But I've sometimes had trouble with "bits of comb" built on the separator, entirely separate from the sections, the bees seeming to have a surplus of wax they didn't know what else to do with—sometimes honey in the little combs, oftener not. I don't know that the kind of separator has any thing to do with it.

A POUND OF WAX takes 20 pounds of honey, or 7, or 3, or something else, and some have said you can't have wax from honey without pollen. These varying opinions may be understood if we accept as true what Julius Steigel says in a German bee-journal. He says that grains of pollen are protected by an envelop of wax. In consuming pollen, bees get also the wax, which is then reproduced in scales if needed; and if not needed, it is thrown out as excre-

ment. Pollen not being the food of old bees, they are not in the wax business. [The highest and lowest figures are probably extremes. More experimenters have agreed on about 7 lbs.—ED.]

ERNEST, that third paragraph on p. 469 shows that you entirely misunderstood the third paragraph on p. 468. Please look again. I've no objection to "that $\frac{1}{8}$ -inch end play of the top-bars." What I want is $\frac{1}{8}$ -inch blocks, not on the end, but on the *side* of the hive, so that the frames can be shoved tight against them instead of being shoved against an eighth space of air. [You are correct; we did not read you rightly; but, take you as you mean, we have to say that we tried little cleats on the side of the hive, but finally tore 'em all off. Try and see for yourself.—ED.]

WHO OF US hasn't wondered what it is that gives the bright-yellow color to beeswax? Wax is generally considered white when first produced in little scales. Cowan says it is always tinted, the color coming from the pollen consumed. But what makes it get yellower in the hive? A German writer says that, like the young of nearly all animals, the young bee, on first emptying its bowels, discharges feces of intense yellow, and this colors the comb. White comb confined in the center of a colony, but inclosed in wire cloth, remains white. Here's something for experimenter Taylor.

UNITING. For years I have had colonies unite, generally when I didn't want them to, by being in the same hive with a hole or crack under the division-board. Working on the same principle, here's the way I have united lately: Having the colonies to be united in two separate hives, I set one hive on top of the other, with a piece of heavy wrapping-paper between, the paper having about its center a hole large enough for a bee to go through. That's all. Just put one hive on the other, paper between. In a few days the paper is gnawed away, and the bees all one family. It may fail sometimes, but not thus far with me.

THOSE SPACINGS, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$ (page 469), are just exactly what were before me by actual measurement as you had fastened in the foundation. It may be that you get them nearer the center generally, and, of course, I measured up at the top-bar. But is there any use for that extra ditch? Wouldn't one be as well? [Say, Doctor, didn't you pick out the extremes? If you measure all the frames again, we think you'd find the foundation to *average* in the center. The one trough would be all right providing everybody used foundation; but our orders show that not half do so far—they depend upon the comb-guide, as fathers Langstroth and Quinby did in the days before foundation was known. We endeavored to make a top-bar that would hit both users and non-users of foundation. See?—ED.]

HONEY-DEW HONEY.

By Prof. A. J. Cook.

Mr. R. Powell, of Redlands, Cal., sends me a sample of honey which he says is the same as was sent east last season by Mr. Brooks, of Riverside. Several cans were sent in a carload of other honey, and Mr. Brooks is having trouble, as the buyer east is complaining that it is not pure. Mr. Powell wishes me to write an article on this honey, for GLEANINGS. The honey is quite dark, but very thick and quite pleasant to the taste. I have very little doubt that it is from honey-dew. I have already taken steps to have it analyzed, so I think I can pronounce with certainty regarding it in a few days. I should feel very safe to buy and use the honey. I would hardly pronounce it first-class, but should call it good. The color and flavor are both below that of the highest grade.

A few days since, in company with our good friend Wilder I visited our brother Brodbeck at his wondrously beautiful and romantic site in Arrowhead Canyon. I think he has the most beautiful place for an apiary that I ever saw. We looked through his hives, and found that his bees were storing quite rapidly. He is so far up in the mountains that the drouth may not seriously affect his crop. Mr. B. told me that he secured much honey last year from the dodder, *Cuscuta subinclusa*. I expressed surprise, as I had never before heard of this curious plant as a honey-plant. Moreover, I said I thought the dodder east bloomed early, while his crop came in the fall. I find I was right. The dodder blooms early, and so I am now wondering if friend B.'s honey was not also this honey-dew honey. I have sent to him for a sample, and when it comes I shall be able to state quite positively. Later, when I have a careful analysis made, my opinion may be confirmed. It is a matter of no little interest, and I shall probe the matter to the bottom.

ANOTHER BEE-ENEMY.

I have now received samples of comb with dead brood, from three different sections of Southern California—one from near Santa Paula, Ventura Co., and one each from Fernando and Pomona, in Los Angeles Co. It is not like foul brood, as the decaying brood is darker, and the viscid, elastic, stringy mass is never seen. On the other hand, the decaying brood is quite dark, and the form of the larva or pupa is always preserved. In every case the cells are scattering, and mixed in with much apparently healthy brood. It is not very serious, as it is, so far as noticed, rarely very abundant, and colonies often recover. It can not be chilled brood, as such could hardly be in this region, and would not be found in scattering cells, as this is found. I have wondered if it could be a case of poisoning. I should suppose the scattering cells would argue against this;

and the fact of the widely scattered regions of its appearance would seem to refute the poison theory. Yet I would suggest that all who suffer from this malady inquire and see if spraying with poisons has been practiced in their localities. One gentleman writes me that he saw it ten years ago, and changed the queen, and health was restored. He found it again last year, and now it appears again, worse than last season. This experience would seem hardly in accord with the poisoning hypothesis. I should like to hear from all who have noticed this disease. I think it is a fungoid malady. I shall try to get time to investigate it. If it is a case of poisoning, then the microbe which is causing the decay will be the common one of putrefaction—*Bacterium termo*, and can easily be identified.

Claremont, Cal.

MIGRATORY BEE-KEEPING IN GERMANY.

CONCLUDED FROM APRIL 15TH ISSUE.

By C. J. H. Gravenhorst.

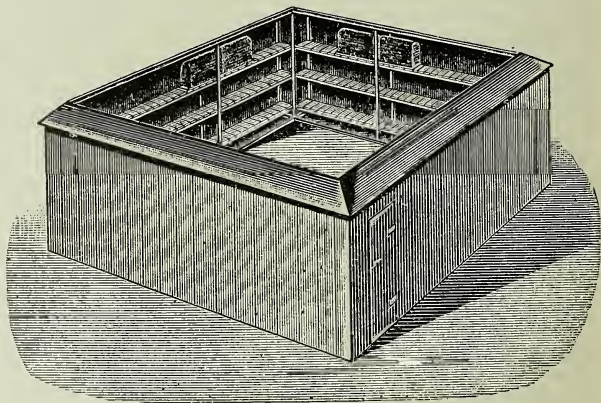
In my previous article I told you, Mr. Root, how I move around with my colonies in the spring. However, a migration at this time will be nothing to one in the month of July and August, especially if the combs in the hives are new ones or do not fill up the frames. The weather in the spring is cool; the combs are a year old or more, and the colonies are not so populous as in mid-summer.

Living in a part of Germany where, in most years, the honey-flow is over by the first week of July, or, at least, it is then not half so good as in the buckwheat-fields and the heath of the province of Hannover, I soon found out that it would pay to go thither with the bees every year in the beginning of July and August. Thirty miles from my home, in the neighborhood of the city of Celle, near the village of Ummern, I rented two places, and there built two bee-houses, one in the midst of the buckwheat-fields, and one on the border of the large heath-lands, where the *Erica vulgaris* abounds. These houses were built as the engraving shows, only a little larger, each for 70 to 80 hives. To illustrate my migration in mid-summer, let me tell you another episode.

One summer during the first days of July, the farmer of whom I had rented the two places for my bee-houses in Ummern, sent me a few lines. He said to me, "On the 9th or 10th of July the first blossoms of buckwheat will be open."

I know by experience that it is always better to be in season with the bees before or just after the blossoms of buckwheat begin to open; for otherwise, if in full bloom, the bees get drunk from the fresh honey of the buckwheat, and perish then, in consequence of which the hives become depopulated. All this is avoided if the bee gets accustomed to the honey by little and little. I therefore immediately commenced with the preparations for the migration. The lindens (basswood) and other plants had yielded a very good crop. I had already extracted several thousand pounds of the nicest honey, and my colonies had only enough honey left to prevent starvation in the buckwheat-fields, if bad weather should set in. Most of the hives were brimful of bees, and had also much brood.

The principal work I had to do was to prepare my colonies in such a way that they would not swarm in the buckwheat; otherwise I should be obliged to watch them day by day, as those bee-keepers must do who do not have movable-comb hives. This I could and would not do. In the first years of my migrations to the buckwheat I had no other chance to be present to catch and hive the swarms. That was very expensive. Later I found a way to prevent swarming at this time. Those colonies having a young queen, and not too many bees and brood for the size of my hives, I was sure would not swarm; but most of those colonies with queens one or more years old would send



GRAVENHORST'S OUT-APIARY REPOSITORY.

out one or more swarms, especially if the weather was not very favorable for gathering honey. To avoid the swarming of colonies that had young queens and too many bees and too much brood in proportion to the size of the hive, I took out one, two, or more combs of sealed brood, so as to let the colonies remain in working order. The brood-combs, I put into those hives that would be built up more therewith. To fill the places of the brood-combs, I inserted

full combs of foundation. In those colonies having old queens I spread the brood and gave also full combs of foundation, but only one frame between two brood-combs. By doing this the bees were obliged to cover all the combs in that way, as they do if one or two swarms have issued from a good colony. Here, I must say, all my colonies with old queens were natural or artificial swarms, hived at first only on 5 or 6 frames, with starters, according to their strength. If the bees had built out 5 or 6 frames, then I spread the brood also, and inserted foundation. All the brood-combs and foundation were full of brood and honey at the beginning of July. There would be at this time 9 or 10 such combs in those hives. By the preparation of these colonies I took out alternately four of the brood-combs with hatching brood, and inserted them in the honey-room. Also I put at the end, 3 or 4 frames full of old combs, filling the empty places with foundation, leaving all combs, with unsealed brood, in the brood-nest before and near the entrance. Right here I will say, I do not work for comb honey, as we do not have in Germany so good a market for comb honey as for extracted. As I can lift out every frame of my hives single, without injuring combs or brood and bees by pushing aside the two frames near the desired one, enlarging the spaces, I can do all the work very rapidly. Furthermore, the hives were prepared for the migration, as I told you in my other article. Where it was necessary, a wooden stick was put between the combs, to give a few shaking combs more support, and then the hives were closed with a loosely woven cloth, by nails or cords.

On the 6th of July, 70 to 80 hives were ready for migration, and on the evening of that day loaded on a wagon, like the engraving showed you in my previous article. The hives were set on the wagon so that the combs ran at right angles to the wheels; otherwise, if their sides were turned to the wheels the combs would easily break down by the jolting of the wagon from one side to the other.

At 9 o'clock I started. As all the hives were covered, and closed with a loose cloth, and loaded top down, in such a way that the fresh air came in contact with the cloth, I was able to feel, by putting my hand over them, as I did now and then, whether the bees were too warm or not. The night was a wonderful one, and the stars shone very brightly. I had traveled only a mile from home when I was aware, by touching the cloths on the hives with my hand, that some of them were becoming hot and damp. In such a case I knew that the bees would be smothered if I did not interfere. There were two of the most populous hives that had become hot. These were loaded on top of the wagon. This showed me what was necessary to do. I uncovered at one end the hives by removing the cloths a little. Of course,

the bees rushed out of the hive and covered the cloths, but none of them flew off or molested me or the cartman or the horses.

So we traveled on, and came, at two o'clock in the morning, to an inn, called "Imkers Heimmat" (Bee-keepers' Home). Here we rested for an hour, feeding the horses and refreshing ourselves. After doing this we went on at three o'clock. On account of the coolness of the night most of the bees of the two hives went inside, and those which hovered on the cloths did not move any way, though the sun soon rose. Now and then, as the sun got higher up the firmament, one or two bees would fly off. Of course, they were lost. But that did not matter.

At 8 o'clock in the morning we were at the place of destination, and not a bee did any harm to us or the horses. These my cartman brought to the inn of the village Ummern, and I and another bee-keeper, who had his apiary one mile away, unloaded the bees. Setting the hives on a wheelbarrow we wheeled them into the bee-yard and to their stands—at first those two with the bees on the cloths. With a little smoke and gentle handling, all went well. Every hive was laid on its stand, entrance above, but so that the cloths faced toward the bee-yard. After all the hives were in their places we covered our heads with a veil and placed every hive on its stand, with the cloth underneath, and then opened the entrances. When this was done I went to the inn of the village, refreshing myself with a good dinner and taking a nap for some hours.

At four o'clock in the afternoon I found myself once more in my apiary. The bees, having had a good and long flight, were peaceful, and only a few flew, as the blossoms of the buckwheat had not opened, but would in the next few days. Then I placed one hive after another on my wheelbarrow and took off the cloths. A few whiffs with the smoker, and I got a peep into the hive, removed the wooden sticks, and placed the hive on its stand, when I saw all was right. In only one of those two hives, the cloths of which I had removed a little on the journey, were two broken combs full of brood and honey. I removed them, placed the hive for a while on its shelf, went aside, and tied with threads and sticks the combs into the frames. When this was done I turned that hive over, set it on the wheelbarrow, blew a few whiffs of smoke into the open places between the combs that the bees there made, and inserted again the repaired combs, supporting them by a few wooden sticks thrust into the walls of the hive.

After I had done this, and seeing all was right, I said to my bees, "Good-by." Let me say here, that I had insured house and bees against fire and mischief.

Four weeks later, as the *Erica vulgaris* began to bloom, on the 8th of August, I hauled an-

other wagonload of bees to the heath, to my other bee-house in Ummern. Having learned from other bee-keepers that the bees had worked very fast on the buckwheat, I had brought with me seven of my hives full of frames, with combs, each hive containing 20. These combs, with the hives, I took along with me to my first apiary that I now visited. Here, by turning over the hives, I found that the most of them were full of honey; and, just as I had expected, I took out 140 frames of sealed honey, filled their places with the combs I had ready, and stored the honey-combs in the seven empty hives, in order to take them home.

Of course, I should have had more honey if I had extracted at the right time, but it was not possible to do that. I was content with the crop.

At the end of September I hauled my bees home. They had done very well, for the hives were full of honey. The only trouble was, I could not extract the honey gathered from the *Erica vulgaris*. But as this honey is very good for feeding bees, I reserved a great deal of the sealed comb for feeding, and the rest I sold for the same purpose to other bee-keepers.

I took that year 10,000 lbs. of extracted honey, and sold it at an average price of 25 cents.

You see, friend Root, that migratory bee-keeping pays very well in Germany if the bee-keeper is always on the lookout for better forage, has a good hive and bee-wagon for migrating, and understands how to move with his bees at the right time.

Finally, I am obliged to confess, right here, that not always does migration with bees here yield such a respectable profit; but one good year makes up for two bad ones. A great advantage in my wandering to the *Erica vulgaris*, for me, is, though the heather honey can not be extracted, it enables me to avoid feeding sugar in the fall. I can feed my colonies with the best food for bees—with sealed honey. To cut a long story short, migratory bee-keeping enabled me to get my livelihood from my bees, and therefore I have always thanked God.

Wilsnack, Germany.

MAKING SUGAR SYRUP FOR FEEDING.

A CHEAP AND HANDY PERCOLATOR OUT OF A REGULAR UNCAPPING-CAN.

By B. Taylor.

Editor Gleanings:—I read Dr. J. T. Beall's article, on page 226, of March GLEANINGS; also that of M. F. Tatman, page 332, April 15, with great interest. Feeding intelligently is, in my opinion, the key to certain success in honey production. It now appears certain to me that it is impossible to winter bees with certainty in our northern country, where they are confined five or six months, unless the hives are well filled with young bees when winter

commences. Sometimes the usual fall flow of nectar from flowers fails; and the colonies, especially those that have made a large amount of surplus white honey, will cease to raise brood when their store of surplus is taken away, and I am now certain that such colonies can not be wintered by any perfection of quarters or preparation, so as to come out in the spring sufficiently strong in bees to breed up strong for the white honey-flow; and without this, profitable bee-keeping, as the conditions and demands of markets now are, is impossible. The remedy is, to feed the bees in the fall, when the flowers fail from any cause; and I know that, by expending 50 cents to \$1.00 for sugar, and making it into suitable syrup, and feeding it intelligently, it will cause a colony to continue brood-rearing, and have the necessary force of young bees that can live until another season begins.

Granulated sugar is the cheapest material to make this syrup of, as a dollar will now buy 20 lbs. at retail, which will make 30 lbs. of syrup—enough to send any colony into the cellar in prime condition. This sugar syrup, however, unless skillfully made, is liable to two serious faults—fermenting and granulating, either of which is fatal to success. I had learned to avoid these difficulties, but at the cost of considerable trouble, and I hailed any simple and certain means of making the syrup as a great boon; and I know that thousands feel as I do; hence the question is one of great importance to bee-keepers in general.

When I read Mr. Tatman's article I decided to go to town at once and get the necessary material for a machine; but no team being immediately at command, I was compelled to delay. Alice Carey says, in one of her sweet poems,—

We can not make bargains for blisses,
Nor catch them like fishes in nets;
And oftentimes the things life misses
Help more than that which we get.

Being disappointed I lay down for a restful nap. Here is the time and place where I do my thinking and dreaming. A vision presented itself to my mind. I had one of Bro. Root's uncapping-cans. Why would not this make a capital leach for making syrup? Here is the 12-gallon can below, for holding the syrup when made, with molasses-gate all ready to draw it off. The top can will hold at least 150 lbs. of sugar, with room for water. But this great weight will be too much, for the wire-cloth bottom will sag and spoil it. I will go at once and plan to overcome this difficulty. Oh happy day! Brother Root has anticipated this very need. He has put this large tin cone in the lower can for this very purpose. I had forgotten it was there. I had often wondered why it was made, as the cappings from combs when extracting are very light, and do not need it. It is now plain why it is there. Brother Root

truly sees things from afar off. Yes, the thing is all ready for a perfect syrup-factory, without a cent of expense or a moment's delay. The flannel filter is the only thing needed. The can is 20 inches in diameter, and a circle was struck on a piece of stiff paper 22 inches in diameter, 2 inches larger than the can. This is to turn up one inch all around against the edge of the can, so the sugar can be pressed tightly against it, and a leak be prevented, and the syrup be compelled to leach through the cloth, for in this lies the secret of perfect syrup.

The paper was laid upon a sound piece of clean old bed-blanket, and three pieces cut out; and as we were quite certain that we had found the "promised land," and that the thing was not an experiment, we located the can under the shop stairs, upon a neat platform high enough to set a suitable vessel under the honey-gate, to catch the syrup. The flannels were spread upon the wire bottom, and carefully adjusted around the edge. Then 70 lbs. of sugar was scooped from the barrel of granulated, setting alongside. Two pails of water was poured on, and I lay down for a night of happy dreams. Was I disappointed in the quality of the syrup? I should say not; and I am happy. Thousands have these uncapping-cans, or others similar, and I need not add another word to this rather long story.

Forestville, Minn., April 25.

[There is no doubt that the syrup from a percolator is of superior quality. Dr. Miller seems to think the process slow; but perhaps his machine was not large enough. We should like to know about how many gallons you could make with the uncapping-can as you have arranged it, per day of ten hours.—Ed.]

RAISING QUEENS FROM DRONE-CELL CUPS.

ROYAL JELLY NOT NECESSARY IN PROVISION-ING CELLS.

By J. D. Fooshe.

Mr. Root:—I have been thinking for some days that I would write you a short article on queen-rearing by the method I have last adopted, which is the drone-comb plan which I gave you last fall, too late, perhaps, for most persons in the North to try it; but I will call attention to it again in connection with some other experiments and observations along that line. I notice a gentleman from Australia says he has raised several hundred queens by using drone comb for cups. I guess that bees are the same in habit all over the world, and my observation and experience are, that bees, when queenless and broodless (especially colonies or good strong nuclei contracted so as to be compact), will rear queens in any kind of wax receptacle that you will transfer young larvæ into. I have never known any thing but a queen to be made out of larvæ transferred to wax cups from drone comb, or worker comb, and for convenience it

is best to place the cups or strips of comb on parallel bars. If we cut strips of comb containing young larvæ the right age for rearing queens, and place them upon parallel bars, as the Alley plan, the bees will select several and convert them into queen-cells, and the rest of the larvæ they will feed and cap, and this latter hatches out worker bees; but where we transfer a larva into a cell. I have never known any thing made out of it but a queen. If we transfer fifty or a hundred larvæ into that many cells, the bees will probably reject 50 per cent, but still all they do accept will be fed for queens. This being the case, it makes but little difference as to what the cups are made of, whether wax or comb. The drone comb has larger cells, and is better adapted to our purpose; but I think I am safe in saying that bees will use worker comb in the same way. It matters somewhat, and I think considerably, as to the quality of the comb used. Clean nice new drone comb, or comparatively new (not black tough comb), will be accepted by the bees as often for cells as any thing that I have ever tried. As for using royal jelly, that is a matter entirely as to taste with the breeder. You know that I have always contended it only facilitates the operation inasmuch as the larva would stick to the jelly, placed in the bottom of the cell. That being the case, it is always easy to clear the larva from the instrument used for transferring. I am satisfied that the bees take all out that is put in (that is, the jelly). As a rule, bees will accept a larva for a queen in two hours after giving it to them. If one will go to the trouble of watching this closely he will find, in the course of two hours, the small larvæ will have a milky fluid deposited near it, and is soon floating in royal jelly, whether any was used or not. All the royal jelly that we deposit in cups is only an inducement for the bees, or, rather, a suggestion to them, for it can't possibly be used to feed tiny larvæ, as it is too old, and not adapted to feed young larvæ for queens. I guess none of us secure jelly much under two days old, so I give it as my opinion that, if cups are not handy, there is nearly always drone comb convenient, if selected and placed away; and in the absence of royal jelly we can proceed, provided one has a steady hand, and can pick up the larva and transfer it into a drone-cell without punching a hole in the bottom of the drone-cell.

Coronaca, S. C.

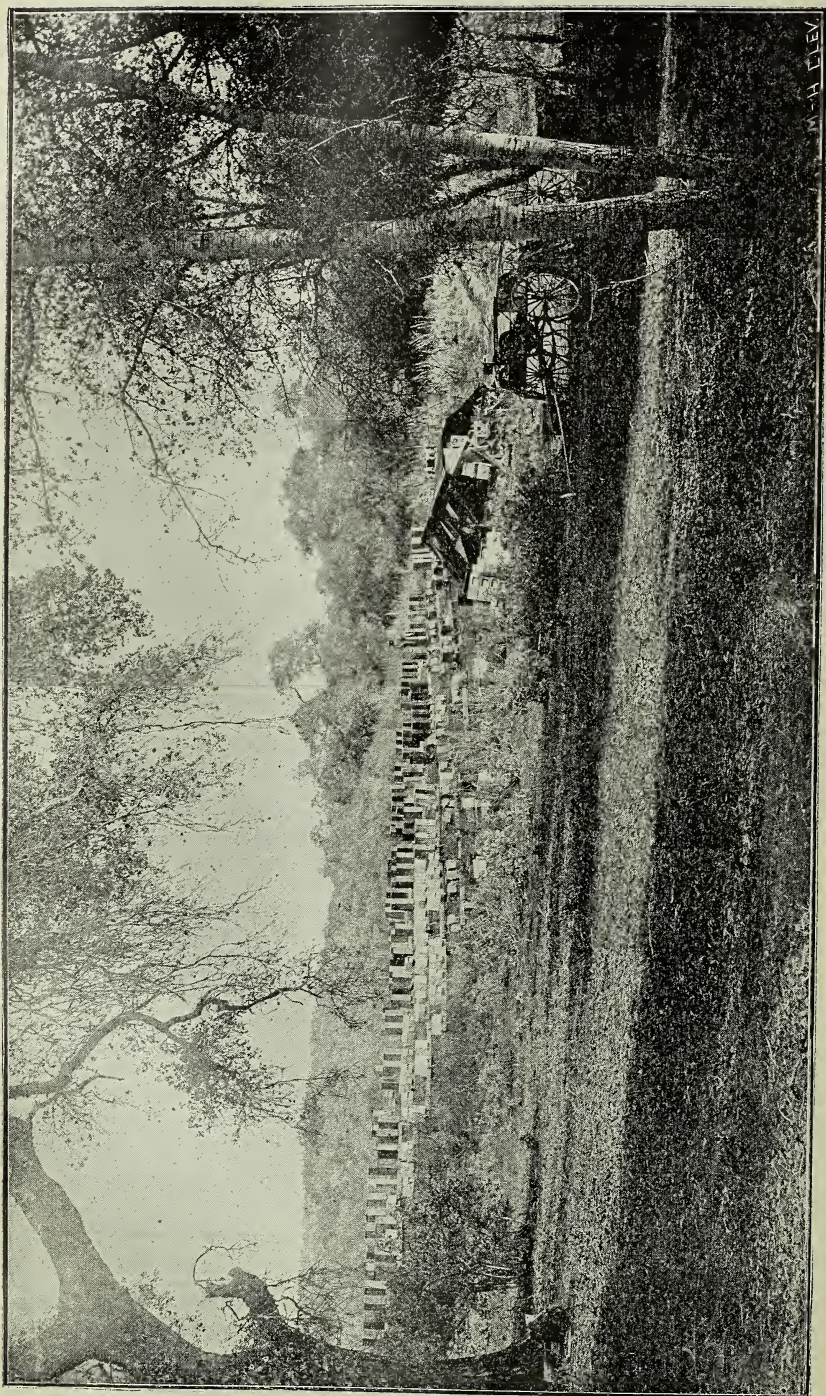
J. D. FOOSHE.

RAMBLE 110.

PACKING AND MOVING HARBISON HIVES, ETC.

By Rambler.

The McCombes ranch is a tract of several thousand acres in a fertile valley on the headwaters of the San Luis Rey River. The region abounds in springs and magnificent oak groves.



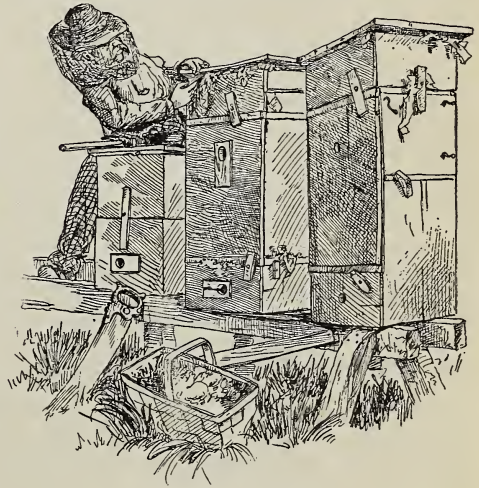
OAK GROVE APIARY.

It is about 20 miles from the ocean, and from some of the mountain-spurs above the apiary the shoen of the ocean can be seen. The live-oak grows here to perfection, making a delightful shade and the very ideal of camping-places. The ranch had over 2000 acres of grain sown, and supported large herds of cattle and horses. The band of cattle had a tenderfoot cowboy attached, mounted on a broncho, with a large revolver sticking conspicuously from his belt. The honey-pasturage was excellent—white sage from valley to hilltop; black sage more sparingly distributed, but much of it; wild buckwheat of rank growth; other plants too numerous to mention; fruits, none to speak of; fruit-men and their cranky notions, ditto. Having in mind what Mr. Muth-Rasmussen said recently in GLEANINGS about cross bees and lack of shade, I observed that the bees in this apiary, though not directly under the trees, were very mild-mannered beside others I have managed where there was no shade. Yes, Bro. Ras., if I ever settle down it will be in the delectable shade of an oak grove where there are babbling brooks and singing birds, where bees are kind, and where feminine per-ecutors are unknown. Where, oh where! can such a place be found? Echo answers, "Where?"

I present to the readers a beautiful and artistic photo of the apiary which was the seat of our operations for several days. It was our duty, as an advance force, to get the 200 colonies ready for moving. Upon arrival we found our honey-house, and what we expected to be our residence, blown over, and only one end supported by a pile of hives. We found room in here for our bed, and established our "kitchen" under the oaks, at the rear of our wagon. There were 50 colonies in new portico L. hives. These were easily prepared for moving; but the 150 old Harbison hives were a vexation of spirit, and extremely lacerating to all the members of our bodies, as you will hereafter see.

That the reader may understand the beauties of a Harbison hive I present a photo of two which are samples of all the rest. It will be observed that there is an attempt to stop the cracks with rags. A good share of the hives were well cracked in front, and all of the rear doors fitted as shown in the picture, or so that bees could crawl out all up and down the corner. Add to this open knot-holes, rotten places in the corners, etc., and it will be readily seen that we had quite a little recreation on our hands. The real work came in where we had to nail on those ill-fitting rear doors, and then saw the hives off at the center, or just above the interior immovable frames. These colonies were to be transferred to new hives when they reached their new location, and it did not make much difference how much we mutilated the hive if it would only hold the bees. Mr. Powell and I pitched into our work right and left. There was a large number of old combs in the upper

part of the Harbison hives. We decided that these should be rendered into wax forthwith; and, finding a suitable boiler, we started a fire. As soon as the water boiled, in went the combs, frames and all. We fed our fire with old hives, and the waxed and propolized lumber made a brilliant flame. We kept this waxworks going until 11 o'clock, or until the job was finished, and secured a large lot of wax. We retired to our flat, and had our restful slumbers, and found our flat, surrounded by the silence of nature, much better adapted to sound sleep than was the granary of the previous night, with its various vocal and instrumental attachments.



HARBISON HIVES.

The next morning we commenced the nailing and sawing operations; and after sawing off the Harbison hive, and tumbling its old cracked head in the dust, a piece of burlap was nailed over the top, a liberal supply of cotton batting tucked in cracks and holes, and it was ready to move. This cotton-batting idea is a very good one, and it stops a hole much better than rags or paper.

We had thus prepared the two front rows when I brought the camera to bear upon the situation. Mr. Powell will be seen mounted on the top of a tall bee-hive. The noble oaks in the foreground; our stylish "flat" in the center, and the many Harbison hives, make a varied and interesting picture.

In the afternoon we were busy at our work when we heard the rattle of big wagons coming through the oaks, and Mr. Wheeler and George made their appearance upon the scene. We expected them about 24 hours later; but Mr. W. is a hustler, and believes that, when there is work to be done, it is best to do it. The two big wagons were drawn by teams of great strength and endurance, and it was the plan to load 50 colonies on a wagon, taking 100 at a trip, making two trips. Mr. Powell and I thought we couldn't

get 100 colonies ready and loaded in time to start that night; but Mr. Wheeler said it must be done, so all three went to plugging up holes and nailing up entrances. George, the teamster, preferred to keep a good distance from the flying bees; but we knew he would come to a realizing sense of the setting-down qualities of a bee after taking a couple of two-day trips with them; and so it did come to pass that George got stung several times, and he hurled several anathemas against our lively pets and the business generally, and the carting of them around the country in particular.

The shades of night were beginning to fall ere the wagons were loaded. Our pony wagon was also loaded with empty hives and odds and ends. I was sorry to see my partner of the day before leave with the rest. They hustled off in such a hurry that supper was forgotten or intentionally omitted. As I went ahead of the cavalcade of wagons, with the lantern, to guide them out of the grove, I could see Bro. Powell gnawing at a cracker. George had a supply of provisions under the seat. Mr. W. didn't eat any thing. Hustlers hardly ever do. I delivered the lantern to the head team when past the danger-spots, and groped my way back through half a mile of darkness to the camp, made up a rousing fire, got my supper in the loneliness and quietness of the forest, and finally retired to my flat, where tired nature's sweet restorer brooded over the scene. Wrapped in utter oblivion, all thoughts of lovely dells passed away, and in pleasant dreams of murmuring brooks, waving trees, and sun-kissed flowers, the tired frame put on new strength for the toil of the coming day.

A RACE OF LARGE BEES—HOW SECURED.

STRONGEST CHARACTERISTICS COMING FROM
THE DRONE RATHER THAN FROM THE
QUEEN.

By Dr. C. C. Miller.

Friend Root:—I send you by this mail samples of comb that I have received from Dr. J. P. Murdock. You will remember him as the Florida man who developed the strain of big bees. Two years ago he sent me a queen, but her workers that I raised were not extra large, and the comb they built was little larger than ordinary. Naturally it should be so, for her progeny were all raised in cells of ordinary size. There is no question, however, that the present samples of combs made by his bees are much out of the ordinary line. If I have made no mistake in measuring, the drone-cells are about $3\frac{1}{2}$ to the inch. Most of the worker goes about $4\frac{1}{2}$ to the inch, and the small piece with the queen-cell is not far from 4 to the inch.

I don't know that it necessarily follows that a larger bee is a better bee, but in one respect I can see wherein there may be a great advan-

tage. If bees raised in cells $4\frac{1}{2}$ to the inch are of proportionate size, then their tongues ought to be one-ninth longer than common. That extra length might be quite an item in a big range of red clover. My first thought was, that it would not be possible for any one to get a queen and raise full-sized bees with ordinary comb; but some of the comb comes so near the size of ordinary drone comb that I think a success might be made by furnishing the queen nothing but drone comb four cells to the inch. Indeed, I feel almost sure about it so far as the comb is concerned, the only question being as to the matter of heredity. If any thing is inherited from the nurse-bees, then there might not be so full success.

Not the least interesting feature of the case is the fact that it is possible to obtain such emphatic results by careful breeding; for if it be possible to make in a few years an increase of 11 per cent in the linear measure of worker-bees—taking it for granted that the size of the bee corresponds with the size of the comb it builds—and a consequent increase of 50 per cent in weight, it seems reasonable that the same amount of effort might produce considerable results in other directions. Breeding for color is another illustration; and although the color of the bee, in and of itself, has little value, yet I suspect there has been more effort in that direction than in any other. As a consequence we have bees of such golden color that they might almost be considered a separate race from the Italian. If size and color are so clearly under control, we may hope that in time we may have added other points. It would be a fine thing to have attention given to longevity, so as to have the working days of each worker increased 25 or 50 per cent, to secure such hardness as to wintering that the north would be on a par with the south, to have the propensity to swarming entirely bred out, and perhaps many other things.

I have been greatly interested to learn something of the doctor's plan of procedure, and give here an extract from a letter which he has kindly written me. He says:

My way of improvement has been with the drone rather than with the queen. Seeing the wonderful influence royal jelly has with the queen induced me to feed it to the drone larvæ. I killed almost all until I learned to feed it, then by careful selection of both drones and queens I have arrived at my present-sized workers. Drones are often weeded out until I have not more than a hundred all told.

Isn't there a strong hint in that paragraph worthy the attention of all breeders? With the possession of queen-excluders the man who is not too closely surrounded by other bees has half the matter in full control by careful weeding of drones. Heretofore I think the principal attention has been given to the queen. In all other lines I think as much attention is given to the father as the mother; indeed, I think

more. The poultryman gets a new cock rather than a new hen; the dairyman a new bull rather than a new cow; and it may be that, in the future, drones may become a matter of merchandise as well as queens. Then Dr. Murdock will get a set of drones from the man whose workers live eight instead of six weeks in the busy season; and when he has that trait well fixed he will get drones from the man whose bees never swarm, and so on. I have hopes that, by getting one of Dr. Murdock's queens, and giving her nothing but ordinary drone comb, I may raise as large workers as his and see them busily at work on red clover.

It may be that A. I. Root will have to brush up that foundation-mill that he threw aside years ago. He made foundation that was laughed at, because it ran $4\frac{1}{2}$ cells to the inch, and the bees didn't know whether to use it for drone or worker comb. The trouble was, that A. I. Root was just that much ahead of the age. I don't think large bees will be secured by using large cells, but large cells will come from breeding large bees, and progress must not be hindered by cramping them in cells too small. I shall watch with interest to see if these bees do better than others on red clover; and if they do, brother Root, please get ready for me some proper foundation.

Marengo, Ill.

[We believe it is quite possible to breed an extra large race of bees—just as possible as it is to breed four and five banded Italians from the ordinary three-banded stock. The best evidence of this is seen in the samples of comb forwarded on to us by Dr. Miller. It might almost be taken for the comb of the *Apis dorsata*, for it is remarkable in size as compared with ordinary worker and drone comb. Now, while we admit the possibilities of rearing these large bees, we somewhat question whether any thing would be gained unless, perhaps, in the one item of their getting honey from red clover. Cheshire says that there is harmony in nature, and that all flora and plant life seems to be specially adapted for the ordinary hive-bee, and in his work he furnishes abundant proof. It is remarkable, but nevertheless a fact, that, with perhaps the single exception of red clover, hive bees are able to reach in some manner the nectar in every blossom of every sort. Cheshire goes on to say, further, that the ordinary hive-bees are of just the right size for making the quickest flights, and, therefore, carrying the largest amount of honey. A larger bee, while it might carry a larger load, would be so "logy" that it would in reality carry much less honey during the day or season, and, besides, a larger bee would require a corresponding change in plant life. Let us give an illustration in the line of mechanics. Take, for instance, the ordinary bicycle. The first wheels were 32 inches in diameter; then by a sort of tacit agreement they were reduced to 30 inches; then again to 28; a few jumped still further down to 26. But very soon the whole line gravitated back to 28 inches as the standard.

How much more perfect are the works of nature! Therefore it would seem that the size of the hive-bee is now and has been for centuries just right to secure the largest amount of honey.—Ed.]

SECURING COMB HONEY.

HOW IT IS DONE

By S. F. Newman.

Brother Root:—I have been requested, as you will see by the inclosed letter, to give my method of operating to secure a crop of comb honey. My plan may not be new; but if you think best you may give it a place in your journal.

It is needless to say, that, to be successful, all colonies must be strong at the beginning of the surplus-honey season. Until that time I confine each of my colonies to such a number of combs as will enable the queen to keep *each filled* with brood and eggs, except a little space in the upper corners of each. When my bees begin to gather honey from white clover, if the requisite number of combs are not filled with brood (each bee-keeper must determine for himself what that number is), I add to my strongest colonies combs *filled* with hatching brood taken from other colonies, until each contains the number of brood-combs to be used during the surplus-honey season.

When a colony swarms I hive the new swarm on empty frames—the number used depending upon the strength of the colony—and place it on the old stand, removing the old colony a few feet away. After the new colony gets well started in building combs, say in two or three days—the length of time depending upon how rapidly honey is being gathered—I remove all the frames and new combs, except three, and supply their places with combs *filled with hatching brood* taken from the old colony, being *very* careful to remove all queen-cells from the combs thus used, and at the same time I remove the surplus from the old colony, and place it upon the new. I never require the new colony to build more than three new combs; and as the season advances I reduce the number of combs to be built to two, and, toward the close of the season, to one. I furnish the old colony with empty combs to take the place of the brood-combs removed.

By this method nearly all the work of the new colony is thrown into the surplus-chamber, all the working force is retained in the new colony, and it is kept at its full strength by the hatching brood that was supplied from the old colony.

After the new colony has been supplied with frames of brood from the old colony, the old one should be removed some distance away from the new, thus throwing the whole field force of bees into the new. If the season is favorable, the old colonies thus manipulated will become strong enough to winter well, and, with their young queens, will make the most profitable colonies for the next season's work. If some of the old colonies, at the close of the season, should be found too weak to winter well, they can be reduced in number, and strengthened by uniting.

By this plan of operating we secure all the advantages of non-swarming, and *more*; for we keep the whole working force in the new colony, and we also get the benefit of the extra energy always exerted by bees that have swarmed.

If I have not made my plan sufficiently plain I will gladly answer, through these columns, any questions that may be asked.

Norwalk, O., May 22, 1894.

[Mr. S. F. Newman is a bee-keeper who is very successful in getting large averages from his apiaries, even in poor seasons. The proof of the pudding is in the eating, and on that basis it may be well to read with care Mr. Newman's article above.

Perhaps a little explanation may not be amiss at this time as to who this Mr. Newman is, for we are going to let out a little secret here. Some years ago, when the honey canard (to the effect that it was possible to make comb honey by filling the combs with glucose, and capping them over with appropriate machinery) was going the rounds of the press, and it seemed utterly impossible to follow it up and correct it, Mr. Newman conceived this unique idea; namely, to get up a yarn of the same ilk, containing a semblance of truth, and yet so ridiculous that no one would believe it, or any story like the comb-honey yarn. Well, this is the story that Mr. Newman started, that few like wild fire all over the country, for he wrote it up in good shape in regular reporter style: A certain Yankee inventive genius in the East had discovered a process for making artificial eggs that could not be told from the genuine. Reporters had tested them, and found them to be as good eating as *real hens'* eggs. The "reporter" was frank enough to admit that the egg-man had not quite succeeded in getting eggs up to that perfection where they would produce perfect chickens; but such eggs, when placed under hens or in hatches would bring forth, in three weeks' time, chickens *without any feathers*. Well, you all know how this story went the rounds of the press; but, contrary to Mr. Newman's expectations, many did believe it; but the great majority doubted it; and then they began to wonder if the comb-honey yarn was not of the same stripe. Although the results obtained were not all that Mr. Newman hoped for, yet the story did great good in causing people to discredit not only artificial-egg stories, but comb-honey yarns, and every thing of the kind. Intelligent and thinking people knew perfectly well that the principle of life could not be put into an egg by any human skill; and at this time, probably, no one believes in it, and we hope that very few really believe that comb honey is manufactured.—ED.]

VARIOUS ITEMS FROM AN EXTENSIVE BEE-KEEPER.

LIGHTING BEE-SMOKERS, ETC.

By N. D. West.

Elwood says a good word for the Crane smoker for the bee-keepers' benefit, and says, save the charcoal, and light with a paper, etc. Well, that's good. What *he* says is worth remembering. But just tell the buyer to use kerosene pure—plenty of it, on some kind of chips or rotten wood. Light it with a match. It will be as easy as lighting a lamp when you

learn how. Add sound maple wood, but don't put out the blaze until the wood is on fire. Charcoal is good for the foundation fire, but I use elm chips that I get at the barrel-factory. These come off the end of the staves where they chamfer for the barrel-head—not dust, but chips. This lights very easily by the aid of kerosene, and makes a good smoke, ready to use quick; and if I do not have a long job of work to do I use nothing more; but when it burns down a little I put on sound maple wood well dried, if I want to do business by the day. Boys, be careful, and don't set any thing afire that you don't want to burn, when using bee-smokers.

THE EIGHT AND TEN FRAME HIVES.

Tell Dr. Miller I feel sorry for him about building those new hives. If he didn't know so much about the bee-business he wouldn't have half so much trouble about deciding on what hive to use. I wish I could help him out, but I can't. I have been using both 8 and 10 frame hives side by side for 20 years, and not less than 100 of each kind. I think that, during that time, each has had its advantages. The ten-frame hive, however, with extra dummy-boards, is something like a harness made large enough for a good-sized horse, with buckles and straps so made that you can buckle it up to fit the size of smaller horses too. By using both kinds of hives I always have honey enough in the spring so that, by dividing it up some, all hives will be supplied with honey. I have, in times past, hived swarms from the 10-frame hives in the 8-frame, using two board dummies so but six frames of combs were used. We get larger swarms from the larger hive, but not so many of them: then we put sections over the new swarms right off, or as soon as the queen was located below. I aim to get all of the box honey possible from these young swarms; and from time to time, when we have the hives opened I add a frame of brood, or a comb empty, or a comb of honey—any thing that we have on hand to fill up the hives and not interfere with the bees' working in the boxes. After the honey season is over we look over these small hives; and all that do not have honey enough to last until spring we supply by going to the 10-frame hives that cast the swarms, and get two frames of honey and place them in the 8-frame hives in place of the dummies. Then you see both kinds of hives have 8 frames.

Again, sometimes we do not look over all, but winter some colonies on the six frames, and give them honey in the spring, after they are set out of the cellar. I will say right here, that, for the past ten years, I have made only the 10-frame hive until recently. I have made 200 standing-frame hives for a special purpose. I have had but two years' experience with these, and will not speak more about them.

REASONS FOR NOT USING THE 8-FRAME HIVE.

Some of the reasons for my not making the 8-frame hive any more are, I get less box room on top; 2. I have more room in the 10-frame, and use as much or as little of it as I need, and, as a rule, in most places, use but eight frames when the boxes are on; 3. When we open the brood-hive in the spring, before boxing time, the hive being one or more frames short, we have plenty of room to move the frames sidewise by taking out the dummy-board, which I always use, and *fixed frames* by all means. I have used these two for 20 years; 4. Many times we find one hive short, with honey or brood, and we want to supply this need, and when we do not have a frame of honey or brood at hand filled solid, as the case may be, to supply the need, we put in two frames half full, and the 10-frame hive will receive them, while the small hive would not. We can add or take frames from the large hive more easily than from the small hive, and disturb the bees and brood-nest less. The Langstroth frame seems to be the standard; but I use a frame about the same size, only deeper, $14\frac{1}{2}$ long by $10\frac{1}{4}$ deep, inside measure; and I make my hives with a rim, so as to make them so nearly square on top that I can turn my crates either way, and it takes two crates of sections to cover a hive; and to young swarms, or swarms not strong enough to use the whole hive, use only half of it at the time of first boxing.

IMPORTANCE OF SIDE PLAY FOR FIXED FRAMES.

I don't forget Dr. Miller, when he was at the World's Fair, at the bee-convention, how he acted out "Sockery," who set that old "plue hen," and how he got on top of that "parrel," and the head "proke," and let him into the "parrel," and the barrel was so full that he could not get himself out of it, nor could his wife pull him out; how the nails stuck in him so that it made him scream "dunder and blixin," and she really had to saw the barrel off of him. You see, he was in that barrel about as tight as I have seen fixed frames in a bee-hive when the last frame was crowded in tight, without any side play, so that, when the bees get every thing glued up solid, the frames were surely *fixed*. So it would want Dr. Miller and his wife, with a crowbar and handsaw, to get them out; and if the bees were as cross as some I have seen, I guess he would "dunder and blixin" again. So, Dr. M., I want a little wider hive than would be required for ten frames; exact spacing, so as to allow enough for frames swelling, bits of wax, etc.; in fact, I like about $\frac{3}{4}$ inch between hive and follower, and a follower, every time, made of $\frac{1}{2}$ lumber. Thin lumber will spring when a thumbscrew is screwed tight enough against the follower to set the partly closed end frames so tight together that it will squeeze the bits of wax out from between them in warm weather, and thereby save

scraping it off. The wax will get there more or less if the frames are not kept wedged or screwed together, which is not desirable at all times. I prefer a wooden thumbscrew, notwithstanding they are in the way some, but not so much on some of my own hives, as mine have a rim $1\frac{1}{2}$ inches wide, 5 inches down from the top. I make my caps of thin lumber, 8 inches deep; these caps resting over the hive 5 inches give me $2\frac{1}{2}$ inches room above the frames; and just level with the top of the frames a handle is cut through the cap with a wabble saw $\frac{7}{8}$ by 4 inches, and a wire screen is nailed over the hole inside of the cap. When I carry bees into the cellar in these hives I leave the cap on; and quilts made out of hop-baling are laid over the frames, with a stick $\frac{1}{2}$ inch square laid under the quilt, to form a bee-passage. The moisture escapes through the quilts, and passes out of these ventilators into the cap.

Middleburg, N. Y.

[We will explain to our readers that Mr. N. D. West was present at the North American Convention at Chicago, last year, and took considerable part in the proceedings. After one of his remarks, one brother said that Mr. West, in his opinion, talked like one who had only a few colonies. Then he went on quite elaborately to show why friend W. was wrong and why he was right. At the close of his remarks some one asked how many colonies Mr. West had, and he very modestly replied, "Four hundred in four out-apiaries." This, of course, raised quite a laugh on the other fellow. We may explain further, that Mr. West is one of the bee-keepers on whom we called on our first bicycle-tour, and one from whom we gathered some ideas. He is quite correct in urging that there should be side play in hives designed for self-spacing frames; and principally for that reason our eight-frame hive from the start was made wide enough to take in a dummy, and a little side-play room besides. The dummy is first to be removed, and this gives room enough to shove the frames over, enabling the operator more easily to get out the first frames.

With regard to thumb-screws, possibly if we were using closed-end frames, *a la* Heddon, we should find them a necessity; but after having tried them quite extensively with and without, on the eight-frame hive, with self-spacing Hoffman frames, we prefer, as does Mr. Hoffman himself, to dispense with their use.—ED.]

WHY THE EIGHT-FRAME IS PREFERRED.

Friend Root:—I should like to give my reasons for using the 8-frame L. hive in preference to the 10-frame. I am a comb-honey producer principally; but when I wish to produce extracted honey I give the queen the two lower stories of the 8-frame hive, and tier up as high as necessary. The problem before me is, to get the honey from my field with the greatest ease and least work possible. Why is it not just as well to work 150 good young queens in 8-frame hives as to work 125 in 10-frame hives, provided you can do the work with greater ease in lifting, have fewer unfinished sections, etc.? Why make such an effort to get and maintain a large amount of brood from one

queen in one large hive? This would do for one who was compelled to keep only a limited number of colonies; but what the bee-keeper wants is to get the honey from his field; and for my part I would rather do it by working a few more colonies in 8-frame hives, even if the 10-frame men are correct in their conclusions, which I am inclined to doubt. I discarded the 10-frame hive some years ago. I should like to ask Bro. Hatch what he thinks of this phase of the question.

HARRY LATHROP.

Browntown, Wis., May 3.

[The average man can lift the eight-frame hive, and perform the other needed operations, with much greater comfort than with the ten-frame. It is true, that the latter would weigh only a fourth more; but you know it is sometimes the last straw that breaks the camel's back.

When we come to talk about large and small hives, the eight-frame may be enlarged to 16 or 24 Langstroth frames, or cut down to only 8, which is as small as it is practical to have a single brood-nest. A ten-frame costs *proportionately* more than the eight, for the reason that wide cover-boards are much more difficult to get. Standard-width lumber makes covers for the eight-frame, but not for the ten-frame. After all, it is not the convenience of the *manufacturers* that is to be consulted, but the pocket-book of the *purchaser* who pays that manufacturer the difference in expense.

Mr. N. D. West, in the letter above, seems to be in doubt which hive he would prefer; and the principal reason for his giving a little bit the preference to the ten-frame is on the principle that a large harness will fit a small as well as a large horse. That is true; but the case is hardly parallel, inasmuch as the ten-frame hive does not begin to come up to the requirements of a large colony, and the ten-frame is too large for the small colony.

There is one point that should be considered, and quite an important one, and we believe it has not been fully touched upon by any of the correspondents thus far: namely, that the bees will fill out their sections better *directly over* their brood than over a frame or frames of honey. The average Italian colonies in ten-frame hives are quite apt to put honey in the two outside combs. When the supers are put on, if the bees go into the sections they will build out and fill those directly over the brood, leaving the outside row or rows untouched, or only partially filled out. On the other hand, a good queen and good management will secure the filling of all combs of an eight-frame hive, more or less, with brood. Hence the eight-frame super, for this reason, will be better filled out.

Still another point is, that the eight-frame is far nearer the standard width than the ten-frame L. hive. The arguments that were advanced years ago in favor of the smaller hive were so great, and the pressure upon manufacturers was so strong, that now the eight-frame is the leader in the North. Whatever may be said of the relative merits of the two widths of hive, no bee-keeper can reasonably afford to have two sizes in his apiary. One can not be set down on the other. In fact, it would be almost as bad as having two sizes of frames in the yard. A ten-frame cover would fit an eight-frame hive; but the reverse would not be true. An eight-frame super could be put upon a ten-frame hive-body; but a strip of wood would have to cover the open space.

Lastly, the 8-frame is a nice medium between

the very large brood-nests and the very small or shallow brood-nests.—[Ed.]

EIGHT VERSUS TEN FRAME HIVES.

I am in favor of ten-frame hives, by a big majority, for this locality, for extracted honey, and I want them three stories high. When I commenced here in 1886, eight-frame hives and black bees were recommended as being best for this country. I experimented with ten-frame hives and Italians, and found the ten-frame hive and Italian bees gave much better results in *honey*, in this locality, and I adopted them before I dreamed of queen-rearing. I find that a ten-frame hive gives room for an abundance of honey for winter. I have never seen a hive have too much honey in the spring; but I have seen some, and heard of a good many that had too little. I don't like a hive as narrow as an eight-frame hive, three or more stories high; a ten-frame hive three stories high is large enough for ordinary times, but we can add another story without its getting top-heavy.

Port Orange, Fla.

J. B. CASE.

[In the South the 10-frame hives seem to be in the majority, and have the preference. In the North the 8-frame enjoys this distinction.—Ed.]

SIZE OF HIVES.

HOW AND WHEN THE TEN-FRAME HIVE IS TOO LARGE AND TOO SMALL.

By J. F. McIntyre.

All of my bees are in ten-frame Langstroth hives; and, seriously, I want to say that a ten-frame L. hive is either too large or too small. Let me explain.

If a queen-excluder is put over the brood-chamber, and the queen confined to one section, the bees can not breed up to over two-thirds of the capacity of a good queen, and about half of the surplus bees that go to make a swarm or surplus honey are cut off. If two sections are used for a brood-chamber, the upper section is only half filled with brood, and the other half with honey; and as soon as the queen passes the swarming climax she is crowded out of the upper section, with honey; consequently this upper section must be extracted before all the brood has hatched; and if a bee-escape is used, the bees will not leave it. There are many other things which make it inconvenient, to say the least, to change this upper section from a brood-chamber to a super, in the middle of a honey-flow. Two eight-frame sections are about right for capacity; but if we use two sections for a brood-chamber and two supers, the shape is not good. It is too high and narrow. The brood will occupy 12 combs—6 in each section—and its shape will be about 17 inches high, 16½ long, and 9 inches wide. Rambler uses two brood-chambers and one super; and after the honey-flow commences he changes

the upper brood-chamber to a super. He makes a lot of honey in this way; but the brood gives trouble in using the bee-escapes. I can not use the bee-escapes with one ten-frame brood-chamber and one super, because the brood-chamber will not hold all the bees, and they will not get out of some supers in three days. Dadants are successful with the bee-escape because they use two shallow extracting-supers and such a large brood-chamber. I am taking Mr. Root's advice, and trying a few hives with larger brood-chambers. I have increased the depth of the ten-frame L. brood-chamber so the frames are $12\frac{1}{2}$ inches deep outside. I have also cut a few L. brood-chambers down, so the frames are 7 inches deep, outside measure, and will use two sections for a brood-chamber, and two for a super. I shall expect these extra large brood-chambers to raise more bees, swarm less, and make more honey; but whether the advantage will be great enough to justify a change from a standard frame, remains to be seen. I think the large frames will produce a few more bees than the two-story seven-inch frames; but every other advantage is on the side of the seven-inch.

Fillmore, Cal.

CALIFORNIA ECHOES.

By Rambler.

Very good idea, Bro. Root—that fellow with a smoker-head in your advertisements. Why not get up a combined hat and smoker, and work the bellows with the jaw? Men might not make it work. Women would.

Yes, friend Trego, I shall have to tie to Dr. M.'s washing-recipe even if he does poke fun at me. The reason is, that there's always more or less of a five-gallon can of kerosene in my back room, while that wash-a-line is far, far away.

That's so, Dr. M. It may be that the old black comb has more of an aroma to it. If so, it probably comes from the young bees' swaddling-clothes that are left in the cell. So if you swallow a few raw larvæ it may enable you to get my theory down.

Mr. Geo. W. Brodbeck is rejoicing over something of a honey-yield this season, while the rest of us are having a blue time of it. His location is at such an elevation that he can look down upon us in the valley. That elevation has had more of a rainfall, hence the better yield.

Bro. Hutchinson looks very nice in that bee-veil and immaculate shirt-front, in the last *Review*; but let me tell you there are bees in this country that would slide under that veil and string by the score. I believe a card properly adjusted around the neck is safer and simpler.

A well-known Southern California bee-keeper twice attended the mid-winter fair, and

chaperoned, or was chaperoned by his wife and a schoolma'am. He writes now that he would not go again, even if his fare is paid both ways. We can vividly imagine the poor fellow's condition, and further comment is unnecessary.

Mr. C. O. Perrine, the man noted in times past as a honey-dealer, and who practiced migratory bee-keeping up the Mississippi River on a barge, is now a resident and land-owner in Riverside, Cal.; and though the snows of many winters whiten his head, he is still an active business man. At present it is orange-orchards and not bees.

Migratory bee-keeping is practiced to some extent this year. Many apiaries have been moved to the vicinity of Riverside and the orange orchards. There is a chance that too many may move in and overstock the pasturage. Atmospheric conditions are favorable for a yield of orange honey. Foggy mornings prevail, and that is the right condition.

There is a great amount of maple syrup upon the California market, in small tin cans. A taste of it is enough to show that it is maple only in name. That is where glucose comes in again to rob an industry of good prices, and bring discredit upon one of the most healthful and palatable products of nature. But for all that we have never heard that the producers of pure maple products ever made much of a fuss about it.

TARIFF ON HONEY.

A BOMB FROM A "FREE TRADER;" AN INTERESTING ARTICLE.

By W. G. Hewes.

On p. 314 your correspondent Mr. Elwood, of New York, attacks that clause of the Wilson bill which proposes to lower the duty on honey. He seems fearful that, stored away in some corner of the earth, there is an immense amount of honey only awaiting a reduction or abolition of our tariff duties, to be dumped upon us in an overwhelming flood. We are informed by Mr. Elwood, that California and the South will especially suffer by this inundation. As to California, I have noticed that the prices for our product are governed entirely by our own supply. The price is bad when the season is good, and the price is good when the season is bad.

In one respect the abolition of tariff duties on honey would be a Godsend to many California apiarists, as the large area in virgin brush on Mexican soil offers greater promise of success in bee-keeping than do many of our own localities where much of the honey-producing flora has been destroyed in making room for orchards and wheat-fields. It would be Americans, not Mexicans, who would make the profits by keeping bees on Mexican soil; for, while we have many Mexicans in California, it is seldom that

one engages in apiculture. Persons of Spanish descent seem to find it more congenial to mount a horse, and, with a pair of big spurs, prod him, than it is to go into an apiary and have the bees prod them.

I do not know what the honey resources of the Central and South American States are; but be they ever so great, unless Americans or Europeans go there to develop them, we are not liable to be drowned in honey from that source. But should those countries produce a large surplus of honey, London, not New York, would be its destination; for when any of the countries of the world have a surplus of any thing for sale, England takes the bulk of it, whether it be oranges or wheat, cattle or cotton, sealskins or jewels, gasoline or canned kangaroos. It is either "mighty are Englishmen," or "great is free trade," for the whole world seems to be delving and sweating to supply free-trade Englishmen with the necessities and luxuries of life.

If the Vermont State Bee-keepers' Association know what is good for them, instead of sending in protests to Congress about the duty on honey being reduced for fear that Canada may send into their markets a pound or so now and then, they will petition that honorable body to place tinplate and lumber on the free list, as the excessive duties on those articles under the McKinley bill make our honey-cases cost altogether too much; and if, to avoid that tax, we engage largely in the production of comb honey in those years when we have bountiful crops here, Vermonters may find their markets flooded with as fine honey as they can produce, and at only 8 or 10 cents a section.

Rambler informs us (page 372) that one bee-keeper in Ventura Co., Cal., produced more honey last season than the whole State of Vermont. It may be some consolation to the Vermonters to know that Mr. W. T. Richardson (the person spoken of) is himself a Vermonter; at any rate, if I am mistaken in this I am sure his better half is. They are both from New England. By the way, Mr. Richardson has, I think, during the past ten years, produced more honey than any other bee-keeper in the world, during that space of time.

This talk of mine, of California engaging very largely in the production of comb honey, is not altogether idle chatter; for selling extracted honey at $4\frac{1}{2}$ cents per lb., and giving away with each 117 lbs., not a cheap chromo, but a box and two tins which together cost us, the past season, 90 cents, has created such dissatisfaction among bee-keepers that their growls can be heard rumbling through the hills from San Diego to Tehachapi. For my part, the thought that I am being taxed for the benefit of persons, some of whom may already have a thousand dollars where I have ten cents, is more annoying than the bites of fleas, and it has already started my buzz-saw to humming as it cuts out the supers necessary for the production of comb

honey. These "protected" lumbermen, tinplate manufacturers, and others of their ilk, are the modern representatives of the knights of old. The knights, for assistance in war, were privileged by the king to roam the country, stealing oxen and maidens, and, incidentally, killing people. The knights of to-day, in payment for supplying the funds by which the politicians hope to keep themselves in office, are privileged by them to fatten off the people by taxing them.

LITTLE RAIN, AND CALIFORNIA PROSPECTS POOR.

Not since 1877 have we had a winter with so little rain as the one just past. In consequence, the hay and rain crops are complete failures, while on a square mile there is not grass enough to maintain one animal throughout the season. Horses, cattle, and sheep are being driven from the country by the thousand to the counties north of us, where a good system of irrigation permits of large fields of alfalfa being grown.

It is reported that, out of one band of horses turned into one alfalfa-field one evening, 80 died the first night. To reach the alfalfa-fields they had traveled for several days with but little to fill the aching void in their bellies but pure air and mountain scenery. The alfalfa tasted so good after this diet, that the 80 aforesaid ate too much. Animals passing through these parts now, and depending for their sustenance upon the roadside grasses, will have a harder time than the "Industrial Army" in its late passage through Iowa.

Bees, of course, are not booming. My honey-tanks are used now as receptacles for water, and my extractor rides around on a sled, supplying liquids to the roots of my fruit-trees. In truth, our honey prospects are now resolved into the following mathematical problem: If in 1892, with 9 inches of rain, we got no honey and lost more than half of our bees, what proportion of our bees shall we lose in 1894, when we have had but 5 inches of rain? The loss will certainly be very great where feeding is not resorted to, and many bee-keepers assert positively that they will not feed—the bees may all die first. As a neighbor puts it, "I have waited three years for a crop of honey, and now I'll be blowed if I feed it back."

Newhall, Cal.

BEES REMOVING EGGS.

LAYING WORKERS, AND HOW THEY ACCOUNT FOR THE PRESENCE OF EGGS IN THE ABSENCE OF A REGULAR QUEEN IN QUEEN-CELLS.

By Willie Atchley.

I see Rambler asks where the egg came from that he found in a super. This question I saw on page 415, May 15. Well, Mr. Rambler, I am prepared to tell you that, in my opinion, the bees never carried that egg there. A few summers ago this same question was up; and as

the apiary has been my schoolhouse, I thought I would investigate this thing. I found an egg in the upper story, the same as Rambler, and have seen them more or less all through my apiary work of 12 years. Well, I then believed, as others, that the bees carried the eggs and placed them there. To prove or disprove it, as the case might be, I have taken some of those queen-cells with eggs in them, and given them to queenless colonies; and every time that I succeeded in getting the eggs saved I found they all hatched drones; and never, in all the cells I have yet tried, have I seen any thing but drones hatched from them. "Well," thought I, "you surely ought to have more sense than to select a drone egg (or an egg laid for a drone), every time, to raise a queen from."

By very careful and close watching I have found that all such eggs are deposited there by workers—I mean laid by workers. I know that almost the whole bee-keeping world thinks that workers *never* lay while they have a laying queen present; but I have found this not to be the case. I also find that the first place a laying worker wants to lay in is queen-cells or queen-cell stubs. It might astonish somebody for me to say right here that I have counted more than fifty eggs laid in queen-cell stubs by laying workers; but it is true, nevertheless. If there are no queen-cells or queen-cell stubs, the laying workers will then use the drone comb first, and, lastly, they will lay in worker combs; and I have seen eggs so evenly deposited by laying workers that their work could not be detected till the larvæ were sealed.

Well, I have wandered away from my subject in talking about laying workers. But if any one will prove to me that the eggs found where no queen has been produce either queens or workers, then I will give it up. But in the remark of mine to which Rambler refers, I was thoroughly satisfied that bees *never* carry eggs from one cell to another, nor to any part of the hive, nor anywhere else, for that matter, and deposit, with the view of raising queens or workers; and I am now satisfied that such is not the case, nor are there any exceptions to this rule. So, Mr. Rambler, the next time you see an egg in the combs, queen cell or not, where you are *sure* no queen has been lately, please take good care to see what kind of insects they make; and if you get a worker-bee or a queen, then I am fooled. I have often read where some people have been surprised and troubled to know where the bees got eggs to rear a queen, when no queen, nor eggs from a queen, had been in their hive for a month. They did not wait to see what the cell would deliver, as they probably did not know by the looks of the cell that it was a drone, and would affirm that the bees had a queen-cell, etc. Well, a great many such things come about by people not thoroughly investigating such matters, and go the rounds as facts, while the

parties are perfectly honest and conscientious. It is a mistake, that the bees reared a queen from such a cell. Remember that one can tell a cell that is going to hatch a queen, from one that is going to hatch a drone, by its shape, etc., as a drone-cell will be rather smooth (or a queen-cell with a drone larva in it); and I may add, right here, that the drone as often dies as hatches, as it seems, at a certain age, he coils himself just as far from the food as possible, as though it did not agree with him. This I notice a day or two before the cell is sealed, and the drone larva will keep coming up away from the food, and the bees will keep extending the cell to cover him, and run out a great long ugly cell. Such drones do not often hatch.

RAISING QUEENS.

I believe I have somewhere read a request that I give my improvement on rearing queens or starting queen-cells by my method. Well, I will suppose that all read my plans of grafting, etc., in GLEANINGS, last year. I have found that, by careful selection of the larva used, say about 8 to 12 hours after it hatches from the egg, or, to make it plainer, just as soon as a little bit of food can be seen about it, so I can tell it has hatched, I use it. Then I select a good strong prosperous colony, take away *all* brood and queen, and let them so remain on combs of honey till they mourn, as soon as the cover is raised, which is usually 12 to 24 hours, and show signs of restlessness; then I take the small larvæ as above from my breeder; have cells all ready; sit right down by the hive, graft the cells, and place them on the combs just under the sealed honey, or, say, half way down the frame, and give a little extra space. I have often 19 saved out of 20, and the finest, evenest lot of queens I ever saw, natural cells not excepted.

Beeville, Tex., June 1.

[You have given us a new theory or solution of this problem, accounting for the presence of eggs when there is no queen present. From the facts you relate, it would seem you are right. But sometimes the best of observers are led to a wrong conclusion; we should like, therefore, to hear from our queen-breeders on this question—particularly from Mr. Doolittle.—ED.]

CRAMPS IN QUEENS.

FEAR ASSIGNED AS THE CAUSE.

By J. B. Case.

I used to be bothered a good deal by queens getting the cramps, when caging them. Sometimes they would appear all right when put into the cage, but would keel over and lie on their side motionless for several seconds, without showing a sign of life, then begin to move their legs, and then would drag themselves around feebly, but would soon be all right again, and as spry as ever. I was afraid they might be injured, and returned several to their

hives until their eggs hatched and larvæ were well grown. Several times they would be a long time in recovering, and I had a few, perhaps three or four, that died. One, at least, that I returned to the hive never recovered.

I think *fear* has a good deal to do with the "cramps," as, in my experience, the queens that are hard to catch are more liable to the affliction than others. Queens that are picked up quietly, and quickly placed in a cage, seldom if ever show any sign of "cramps," while if a queen is chased around, and frightened, then held some time before caging, she is quite apt to show more or less of the symptoms.

As I have caged some 600 queens this spring, with but one showing any sign of cramp, and that was owing to my carelessness, as I was in a great hurry, I will tell how I do. I open the hive as quietly as I can, when I find the queen, set the frame so I can pick her up, take the cage in my left hand, and spring up the wire cloth with the forefinger, then pick the queen up by the wings, with thumb and forefinger of right hand, bringing the cage close to the queen as I pick her up and drop her into the cage quickly and gently. Very simple, is it not? But sometimes there is a hitch. Quite often the frame has to be held with one hand while the queen is caught, and then while the other hand is getting the cage ready the queen gets terribly frightened, and struggles frantically to escape and goes off into a kind of fit. Under these circumstances, as soon as I have caught the queen by the wings with thumb and forefinger I slide the second finger out under the queen so she can stand on it. When every thing is "lovely" she has solid bottom under her, and seems to lose most of her fear at once. I have carried queens around for some time when held as above, and have never had *one* show a sign of the cramps while caging.

Queens fly but little, and are seldom out of the hive. In their normal condition they are surrounded by a throng of friendly bees, in partial or complete darkness. From this peaceful state comes a rude awakening; her home trembles as the hive top is wrenched off; smoke pours in; the comb on which she was peacefully and no doubt happily employed is raised out in the glare of the daylight; amid the confusion she tries to hide, but is chased around, rudely taken up by her wings, by a master she has never seen. No wonder fear fills her heart, as she feels all hope is gone, and "heart failure" results, or she "swoons," or gets the "cramps."

There are lots of bees handled in this or a worse way. I wonder how many people would die of "heart failure," or "swoon," or have "cramps," if they were used as ruthlessly and unnaturally.

My daughter Edna, who assists me in the apiary, aged 14, caged 25 queens by half-past ten, without assistance. Last night was very

cool, so she could not commence until nearly 8 o'clock A. M. Only 10 queens were in hives marked ready; the others had to be hunted up.

So far we are having the best season I have known here. I took 200 gallons from 50 colonies May 14 and 16, and now they are nearly full, and ought to be extracted at once, and still are hard at work. I am suffering from a bilious attack to-day, and have to keep out of the sun, though we are pushed by our work.

Port Orange, Fla., May 22.



HOW TO PREVENT DRONE COMB BEING BUILT.

Question.—In the production of comb honey, where a first (or prime) swarm is hived on comb-foundation starters, say two or three inches in depth, and with sections on top filled with full sheets of foundation, what is the best method of preventing the building of drone comb in the brood-chamber?

Answer.—Under such circumstances as the question describes, prime swarms are not very apt to build drone comb, as drone comb is very largely built the first season for store comb. In other words, bees build very little drone comb the first season after being hived, only as they get in advance of the queen in comb-building. If they build comb faster than the queen can occupy it with eggs, then they keep on building comb, the same as they would if she kept eggs in the cells as fast as built; but instead of building worker comb they change the size of the cells to those which are the most economical for storing honey, which are of the drone size. These cells are filled with honey, so do very little harm the first year; but the next year, as the honey is consumed from them, the queen lays in them, and from this comes a horde of useless drones, or such bees as produce no honey, but constantly consume it. The above is applicable to a swarm of bees in box hives or in trees, where they can do just as nature prompts. But it will be seen that the questioner has placed his swarm in a different state than would be one in a hollow tree, in that he has put on sections filled with foundation, which foundation will be drawn into comb as fast as the bees want room to store honey, as well as to remove a large part of the bees from the brood-chamber, and for this reason the bees will very rarely build comb in the brood-chamber faster than the queen will fill it with eggs, if the queen is a good prolific layer, as she should be; and the result is, sections filled with honey, with very little, if any, drone comb in the brood-chamber below; and, as Bro. Hutchinson and I believe, the brood-chamber

is filled with comb more cheaply under such circumstances, and more honey secured in the sections, than where the brood-chamber is filled with frames full of foundation. Now, if, in addition to the above, the brood-nest or brood-chamber is contracted to two-thirds its usual size when the swarm is hived, we are almost certain not to have any drone comb built, for this gives an additional security against the bees getting the start of the queen. But suppose a frame or two of drone comb should be built, this can be removed from the hive the next spring, and frames of worker comb substituted for it, when this drone comb can be melted into wax, or kept for the production of extracted honey, using it in an upper story over a queen-excluding honey-board. I have practiced this method for years, and think it pays me better than to buy foundation. I am well aware that there are many of our very best bee-keepers who do not agree with me here, but would say, "Fill the frames full of foundation every time;" but when I answer any question, I, of necessity, must answer it from my own standpoint; and if any reader thinks other than I do, he has perfect liberty to follow the plan given; test it to know that his different way is better, or let it alone altogether. I have never seen where there was any occasion to feel hard toward a brother or sister bee-keeper who honestly differed with me in opinion, for there is room enough for all.

BEEs EXPELLING WATER FROM SWEETS.

Question.—Some have asserted that bees have the power of expelling water from diluted sweets, when on the wing, etc. Is there any truth in this assertion? and has there been any gland discovered whose function, resembling that of the kidneys, seems to be that of separating water from honey?

Answer.—I think the assertion is a mistake, for there is no connection that I can find between the honey-stomach of the bee and the intestines of the same, except by way of the mouth. That bees have the power to separate and expel the watery portion of diluted sweets while in the honey-sac, is a proposition not supported by any conclusive evidence, so far as I have seen. The discharge in the form of spray, which myself and others have seen in the morning sunshine, when bees were carrying sweetened water from feeders in the open air, and when at work during an excellent honey-flow, was most probably caused by a well-filled honey-sac pressing on the lower intestines, thus discharging their watery contents. After carefully watching this matter for years, I can believe this spray to be only thin excrement; yet I am aware, as was said by one in the past, "There are more things in heaven and earth, Horatio, than are dreamed of in your philosophy." Is there any reader of GLEANINGS who can tell us more about this subject?

SHADE FOR HIVES.

Question.—What is the best method of shading hives from the sun?

Answer.—Various methods have been advanced, such as grapevines, sunflowers, trees, shade-boards, etc., each having its own good points. Trees have one advantage over every thing else, in that they shade the apiarist as well as the hives; and what bee-keeper is there who has not wished for a shield from the sun for himself when working for hours on a July or August day when the mercury was up in the nineties in the shade? While this is so, yet trees, as a rule, are apt to give too dense a shade; and I am satisfied, from years of close observation, that, so far as the bees are concerned, they do much the best right out in the rays of the sun the whole year round, when the question is dense shade or no shade. For this reason I prefer to have a shade where I can go once in a while when becoming greatly heated, and either paint the hives white or use a shade-board for each hive, letting them stand in the sun. Lately, in making some new hives I have taken no pains to make the cover water-tight, but have made a shade-board to project from two to six inches around the top of the hive, the six inches being to the south, while the north side has a four-inch cleat nailed to it, thus giving a pitch to the south, this causing the rain to run off easily, while at the same time it gives a good circulation of air over the top of the hive, so that the heat never drives the bees out of the sections or causes the combs to melt down, with the hives standing in the full blaze of the sun in the hottest of weather. Where I formerly covered the tops of my hives with tin, or made tin-roofed hives, I now cover this shade-board with tin, and in this way no water ever touches the top of the hive. After a use of them for two years I am much pleased with them. The wood material used for the shade-board is $\frac{1}{4}$ -inch stuff, thus making it very light to handle; and as an insurance against the wind blowing it off, I put a common brick on each; and for two years we have had no winds strong enough to stir a single one.



J. W. M., of Ark., wishes to know whether the combs in box hives, from which the bees have died, will be suitable to transfer into brood-frames. *Ans.*—Some of them; but the majority of them will be crooked, and had better be made into wax.

W. F. A., of Pa., desires to know how white wax is made. *Ans.*—Generally by the use of chemicals. See "Wax" in our A B C book. It

may also be bleached by leaving it exposed to the rays of the sun, so as to be practically white. If the wax is left in the solar wax-extractor long enough it will become white.

J. W. B., of Va., writes: "I have some bees; I do not know what they are. They are very small. Some of them are as black as coal, and some have one yellow band." *Ans.*—There seem to be two kinds of black bees in this country—one a sort of brownish bee, of good fair size, and another coal black and smaller. The bees you have are doubtless of the latter kind, with a very little Italian blood mixed in, or what we should call very dark hybrids.

J. W., of N. Y., asks: 1. What is the legal distance for a hive of bees to stand from a street or highway? 2. How close can the bee-entrances be for a house-apiary, considering the welfare of the bees, and economy of space inside the house? 3. What point of the compass is it best for the entrances to face? 4. Will a wall of inch boards, two thickness, with paper between, be any injury to the bees in summer? *Ans.*—1. In most States there is probably no legal distance. However, there may be a municipal ordinance regulating the distance from the highway. 2. Generally not closer than 2 feet. 3. Toward the east or south. 4. No. Better make a space between the walls, and pack with sawdust.

J. B. C., of La., wishes to know whether it is possible to breed a queen whose workers shall be extra honey-gatherers, by tinkering or doctoring with the larvæ of said queen before she hatches. *Ans.*—Certainly not. This thing has been brought up several times before, and certain old-fogy bee-keepers have wisely said they had the secret of manipulation, which they said they would sell for a certain sum. Man can not step in and interfere in this fashion with the processes of nature. The only way to get extra honey-gatherers is to breed by selection—that is, by breeding from queens whose progeny excel others in the yard; and by this process, in time, a race of workers more energetic than the average might be secured. For some reason or other, but little attention has been paid to bees for business. The whole rage nowadays seems to be for *color*—five bands, etc. This is all right in its place, but we hope as much—*more*—attention will be paid to bees for energy and longevity—in general, bees for business, because it is from these that come the dollars and cents. Extra color alone will not add another cent to the pocketbook, except—that of the queen-breeder, who breeds them just because his customers demand them.

J. M., of O., inquires what we recommend for covering sections while the bees are working in them, and what sort of cover we use over the brood-frames when the sections are off. *Ans.*—With the Dove-tail hive, we use no other cover than the hive-cover itself. This will leave

scant $\frac{1}{4}$ bee-space above the sections. But a great many—and we believe it is a decided disadvantage—put on the sections old carpets, old cloths, etc. So far as the amount of honey is concerned, these old cloths do not make any particular difference either way; but far cleaner sections, and hence comb honey that will bring a higher market price than that which is secured without the use of any carpet or cloths will be secured, because many bee-men do not scrape their sections. Wherever the cloth comes against the sections, the bees will daub a line of propolis; and if they can push the cloths up they will chink in propolis in the crevices, providing it is less than a bee-space. Practically the same reasons apply for not using enamel cloths or any thing of the sort over the brood-frames. The thick top-bars have practically no burr-combs. If hives are properly constructed with bee-spaces, then cloths, old carpet, enamel cloths, etc., are worse than useless.



CAN SUPERS BE PUT ON TOO SOON?

I notice in my perusal of *GLEANINGS* there is more or less said about the proper time to put supers on the hives. Will you kindly inform me how they could be put on too soon? That is, what harm would result from doing so? Probably this would interest others as well as myself.

E. BRUBAKER.

Philadelphia, Pa., Mar. 21.

[The only objection to putting supers on too soon is, that the bees will unnecessarily soil the sections by traveling over them, and perhaps gnawing holes in the foundation. But if the bee-keeper is in doubt, we presume it would do no harm to put sections on a week or ten days too soon, and, on the other hand, it might entail considerable loss to put them on too late—loss of the colony by swarming for want of room, and loss of the honey that would have been gathered and stored in the sections.—*Ed.*]

THE CHEMICAL QUALITIES OF GLUCOSE AND GRAPE SUGAR.

I am glad to see you take such a decided stand on adulteration. Glucose is not grape sugar, though it has the same chemical equivalents—carbon 12, hydrogen 12, oxygen 12. Chemists determine this by analysis; but no chemist can determine the arrangement of these equivalents or atoms, nor can he tell the effect the arrangement has on the article made up of these atoms; for instance, in true fruit sugar the placing of the atoms is, hydrogen first, then oxygen, then carbon; but in glucose it is carbon first, then oxygen, then hydrogen. Now, the number of equivalents may be just the same, 12 each; but the reversing of the order may make a world of difference. As there are limits to

human thought beyond which the keenest minds can not go, so in chemistry there are limits. No chemist has yet discovered the size and position of atoms, nor the influence the position or change of position of the atoms makes in bodies—how sulphuric acid effects this change of place, and converts starch into sugar or glucose; and the very fact that the sweetening properties of glucose are not equal, weight for weight, to true grape sugar, ought to settle in the mind of any man of common sense, for ever, the fact that glucose is not grape sugar, though the chemical equivalents are the same. I don't profess to be an expert in chemistry, but I have paid a good deal of attention to it.

REV. J. JANEWAY.

Pawling, Pa., May 8.

THE CONDITION OF BEE-KEEPING IN GERMANY.

In Germany great complaint is made over the depression of bee culture, and for this the new tariff law is held responsible. America and Switzerland send into Germany annually some one million dollars' worth of honey; and this is sold at so low a price that, together with the low protective duty, it renders it out of the question for the German bee-keepers to hold their own. So also the price of wax has suffered the important decrease of about 50 per cent in price—that is, from 48 to 60 cents it has fallen to 26 and 30 cents, reckoning a German mark at 24 cents. From this we see there is no longer any motive for keeping bees in Germany; and, worst of all, is the adulteration of honey, against which the law seems to provide no adequate defense. Besides, to add to the trouble of those who live in the Lünenburg heath, and who can not get even the poorest kind of extracted honey, large quantities of so-called "Lünenburg Extracted Honey" are thrown on the market.

Medina, O.

KARL R. MATHEY.

STINGLESS BEES IN YUCATAN.

The other day, when reading the description of a tour a German traveler made through Yucatan I came across a passage which was somewhat surprising to me, and will, no doubt, be news to many of your readers too. The writer says that, a few leagues from Merida, at the hacienda Zacalun, the property of Don F. Leon, he noticed quite a strange kind of bees he had never seen before, and did not see afterward within the tropics. "They are larger," he continues, "than the German bee, of a brownish-yellow color, and stingless. There were, under a shelter, over 400 hives in logs, sawed the same length, hollowed out and laid one above the other in terrace shape. At both ends they are closed with wooden plugs. To get the honey, one looks to see at which end the honey is, which is stored in wax pockets of the size of a regular apple; then, after the hive is hung in a slanting position, holes are opened in the pockets, and the honey, which is just as good as

ours, is allowed to run out. The brood-cells at the other end are six-cornered, like those of our bees." That is what I read, and I mention it with this caution: I neither believe nor disbelieve it; but, judging from what else the writer has to report and describe, he gives one the impression of being a perfectly honest man, who himself fully believes what he relates.

CHARLES NORMAN.

St. Petersburg, Fla., May, 1894.

[The stingless bees of Mexico and certain parts of our own country are a small bee, about half the size of the ordinary German. We do not remember to have seen any statement of any such bees being larger. We, however, accept the statement with caution, and in the meantime ask our subscribers to furnish us any facts that will corroborate or disprove it.—Ed.]

WOOD SEPARATORS NAILED ON WIDE FRAMES A SUCCESS.

Allow me to disagree with Dr. Miller in regard to wood separators, on page 378. I have just finished filling 2800 section holders with sections, and they all have wood separators *nailed on*. I would not have them any other way. Dr. Miller does not say what the thickness of his is; but mine are sawed $\frac{1}{8}$, and are the full width of the holder. Some of them have been in use two years, and show no signs of moving in any way. I would have them nailed on because it gives me 2800 less pieces to handle; by their use the sections do not fall out sidewise when putting in foundation by the melted-wax plan, and four sections can be handled at once. Now, why is it that so often the same article gives different results with different men, and can not be used in the same way? I know Dr. Miller's separators warped and curled when nailed on, because he says so; and I know mine do not, as any one can see by stepping into my bee-house.

A word for the holders. I would not tolerate a wide frame with a top-bar—the holders are so much easier emptied. With Carniolans, propolis is no objection to their use, as none of my honey was scraped at all, and I got 17 cts. for it too.

H. P. LANGDON.

East Constable, N. Y., May 4.

[The separators that Dr. Miller spoke of as not being satisfactory when nailed on wide frames were of the *sliced* sort. He probably had not tried those that were sawed. These latter are better in every way, and almost as cheap. We have no doubt that, when $\frac{1}{8}$ inch thick, they would work all right, even when nailed as you say.—Ed.]

SWEET CLOVER AS A TROUBLESOME WEED.

Mr. Root:—I notice in Dr. Miller's Straws that he is lamenting a failure of his sweet-clover seed growing. Now, it seems to me he ought to feel good over it. It may be he knows all about sweet clover and what a nuisance it is. We would just as soon think of sowing mustard or thistles as sweet clover here in Wood Co. It may not spread with him, how-

ever. Every road here has its accompanying ditch, and they are lined with the nuisance. It is of no benefit to anybody, except for honey, and it grows 6 to 8 ft. high, and half an inch in diameter. It goes to seed, and remains standing all winter, looking very unsightly, like a dense growth of underbrush. It will occupy any uncultivated land, and is a nuisance in general.

If you wish I will describe my winter cases made at a cost of 10 cents each besides a little work.

M. C. DIMICK.

Bowling Green, O., May 7.

[Yes, we should like to have the description.—Ed.]

SWEET CLOVER ON NEW GROUND.

Will sweet clover grow in new ground that has not been broken? I have been thinking that I would try some.

G. W. GRIMES.

Porters, Del., May 14.

[I presume likely sweet clover would grow on any kind of ground when started. I notice this spring it is coming up with great luxuriance all along the banks and cuts in the hard clay soil of our new railroad. Where no other plant has thought of growing for the past four years, this is pushing ahead right in the hard ground with wonderful luxuriance, and it is getting to be so thick that the railroad men have to mow it off and dig it out to keep it from catching fire during a dry time and burning the ties. By the way, I suppose it is well known that bee-keepers are accused almost everywhere of sowing the seed of sweet clover on railroad ground, as on other places. I have never heard of a bee-keeper doing it in our vicinity; but I think the truth is, it seems to take specially to new ground—particularly that which is brought up from a considerable depth. I do not believe there is any need of manuring at all, nor any kind of fertilizing, for sweet clover. Alfalfa and other plants that grow down so deep would probably come under the same rule. This new pea, *Lathyrus sylvestris*, seems to be ahead in this line of forage-plants, from the fact that the tops remain uninjured during our severest winters. Sweet clover always dies down to the ground. I do not believe I would think of putting sweet clover on any ground that is good for other crops—at least, not as a rule.—Ed.]

THE VALUE OF HONEY FOR CHILDREN.

[Dr. Böhm, a physician of Schweinfurth, Germany, who has made a special study of the diseases of children, writes in substance as follows in regard to the value of pure honey for children. The matter was furnished us by our Mr. Mathey.—Ed.]

Children which grow fast, and, in consequence, look pale and weak, have special need of sweets. The trouble arises from a lack of proper nutritive elements in the blood whereby to replenish the waste of the body. Here the use of saccharine matter becomes necessary, as it supplies fuel, so to speak, to the animal frame. Nature now calls for a pure sweet—one containing a large per cent of grape-sugar, but one which is almost entirely lacking in nitrogen—that is, honey. Hence children should have honey freely, and as often as possible. Especially is the use of milk sweetened with honey, and eaten with good home-made bread, to be recommend-

ed. That is the most healthful, savory, and digestible breakfast; and especially in winter can nothing be found more conducive to the health of children than such food. While milk and good bread nourish children very well, the honey warms the body and strengthens the organs of respiration. The idea that honey is indigestible, and "remains in the stomach," as many believe, is a mere prejudice. Honey is indigestible only when taken in large quantities not combined with nitrogenous food. But good home-made bread, spread with honey, is more nutritious for children than whole boxes of biscuits, extracts, and other artificial products.

K. R. M.



Receive my instruction, and not silver; and knowledge rather than choice gold.—Prov. 8:10.

WE are entirely caught up on orders, and have now discontinued our night force. The past week or ten days of cool wet weather cut down the number and size of the orders.

A SERIES of lessons in practical apiculture, for beginners, prepared by Mrs. Jennie Atchley, is now running in the *American Bee Journal*. So far as we have glanced over them, they are interesting and practical.

R. L. TAYLOR has reported, in the last *Review*, a set of interesting experiments on 24 colonies, half of which were fed sugar syrup, and half honey. The result shows that "the average consumption of sugar stores was but 3½ lbs., while that of honey was 6½ lbs., or more than twice as much." Then Mr. Taylor goes on to say, "This has added importance when we remember what has been well established, that granulated-sugar syrup is fully equal to the best of honey as winter food for bees, and far safer for that purpose than any inferior honey."

THE *Review*—or, rather, its editor—says he finds the Carniolans are great breeders—especially so in the spring; yet they "will rear brood, and swarm, so long as there is a drop of honey in the hive," and "it makes no difference if honey is coming in." That is quite in line with our experience. They will build up faster, and then swarm. It would be desirable, as Mr. Hutchinson says, to combine these traits with the "sense and thrift of the Italians," for these latter seem to be more provident, and more watchful for the future, than any other known race. Possibly a cross would be desirable; but how are we to distinguish them from ordinary hybrids?

A CORRESPONDENT, referring to the tall evergreens around our apiary and that of Mr. Boardman, asks what kind of evergreens they are. Around our own apiary they are only the ordinary Norway spruce. They are the hardiest and most vigorous growing of any of that kind of trees in our locality, and perhaps for most localities in the North.

STATISTICS.

We have just received the following statistical report from the Secretary of the Illinois State Bee-keepers' Association. We have as yet prepared no statistics, but the following will answer for the present. "a" refers to the number of colonies; "b" to the prospects of a crop; "c" to the amount of surplus, and "d" to the grade or quality.

- A. B. Anthony, Colefa, Ill. a. 26; b. very good; c. none now.
 F. Arnold, Deer Plain, Ill. a. 26; b. very good for spring crop; c. none—bees in a starving condition.
 T. B. Allen, Stirrup Grove, Ill. a. 32; b. very poor—no white clover; c. none.
 J. Bertram, Bristol, Ill. a. 12, hives crowded; b. poor; white clover injured by drouth; c. none.
 M. Bevier, Bradford, Ill. a. 43; b. good; c. none.
 S. N. Black, Clayton, Ill. a. 30; b. poor—no white clover; c. no surplus.
 F. Blocka, Elgin, Ill. a. 18; b. good—hope; c. bees working in sections; d. not much to grade.
 P. Blunier, Roanoke, Ill. a. 51 in good condition; b. not good—white clover thin; c. no surplus, but some in brood-nest; d. good.
 D. A. Cadwallader, Prairie du Rocher, Ill. a. 22; b. good at date—white clover abundant; c. none yet—bees swarming.
 Dadant & Son, Hamilton, Ill. a. 350; b. p. c. none.
 P. Dahl, Granville, Ill. a. 188; b. fair; c. no surplus; d. some honey-dew.
 D. E. Robbins, Piquon, Ill. a. 30; b. very poor—no white clover; c. enough to keep brood-rearing brisk; d. honey-dew almost entirely.
 P. J. England, Fancv Prairie, Ill. a. 26; b. good; c. none yet.
 J. D. Everett, Oak Park, Ill. a. 14; b. very good; c. can't tell.
 J. W. Finch, Jr., Springfield, Ill. a. 13; b. very poor—no white clover; c. not any.
 E. T. Flanagan, Belleville, Ill. a. 275; b. only fair; c. none.
 J. A. Green, Ottawa, Ill. a. 118; b. fair—bees in first-rate condition; c. no surplus; d. some honey-dew.
 Wm. Little, Marissa, Ill. a. 60; b. not good—cold, and bees starving; c. none—clover badly injured by late frost.
 J. H. Martin, Bloomington, Cal. a. 170; b. prospects are that there will be but little honey to ship from this part of the State; c. bees have hardly made a living—are being fed in some localities; d. not much to grade.
 Dr. C. C. Miller, Marengo, Ill. a. 201; b. excellent; c. what are you talking about?
 A. Phelps, Springfield, Ill. a. 30; b. fair; c. can't say; d. No. 1.
 Jas. Poindexter, Bloomington, Ill. a. 156—majority weak; b. not good—honey badly killed; c. no surplus—an average for brood-rearing; d. not good I think, for time of year, and for source from which it was gathered.
 G. F. Robbins, Mechanicsburg, Ill. a. 78; b. very poor—clover all killed out last year; c. one thimbleful from fruit-bloom.
 A. I. Root, Medina, O. a. 150; b. good; c. probably 10 lbs. per colony; d. good quality.
 J. Q. Smith, Lincoln, Ill. a. 62; b. not any so far—no clover in sight; c. none.
 E. A. Snell, Milledgeville, Ill. a. 110; b. fair; c. a liberal quantity for brood rearing; d. none stored to date.
 P. E. Vandenberg, Jerseyville, Ill. a. 40; b. very poor—have nearly stopped breeding; c. haven't a sealed cell.
 W. M. VanMeter, Eva, Tex. a. 4; b. good; c. 50; d. excellent.
 E. Whitteley, Peoria, Ill. a. 65; b. fair—white clover injured by drouth; c. none.

JAS. A. STONE, Sec.

At the close of the honey-harvest we will prepare such statistics for the whole United States, the same as we have done in former times.

GALVANIZED UTENSILS FOR HONEY. AGAIN; A STATEMENT FROM PROF. SPENCER.

ON page 404 it will be noted that Mr. Elias Fox stated he had been in the habit of having his honey stored in a galvanized vessel, and that he had never detected any injury to the honey. At the time, he sent us a sample of honey that had been melted in this galvanized pan three times; and in our footnote following we stated that we had forwarded this sample to the Chief Chemist, at Washington. The nature of our letter to the chemist will be plain from the reply following, which we take pleasure in submitting to our readers:

THE very thing that we were afraid would some time happen did happen in our last issue. A type pulled up and planted itself lengthwise over the face of the half-tone engraving on page 455, and went through the press. The result was an oblong white spot on the face of the picture. We mention it here so our readers may know that it was not an original blemish in the engraving.

W. Z. HUTCHINSON takes the ground, and very correctly, that bees ought not to be sent by the pound, without brood; that bees and brood are like man and wife—they ought not to be separated. We have long since abandoned the selling of bees by the pound, for the very reason we had so many losses during shipment; and now when we send them on brood they invariably go through in good order.

"OBSERVER," in *Progressive*, hints that the "whole Heddon business was a put-up job." We wonder whether Observer would say this under his real name. Attacks from a writer under a *nom de plume* are like stones thrown by a man from behind a tree. Well, referring to the "put-up job," all we have to say is, that if Observer, or any one else, will call at our office we can furnish him *plenty* of proof that it was not. We might say a great many more things than we have said; but we forbear saying more.

PROSPECTS.

We have been receiving reports saying that bees were starving; others that honey is just coming in. In all probability this warm spell of weather had not begun to take effect in localities of those first mentioned, and we are in hopes that even they are beginning to find now that honey is not only beginning to come, but coming with a rush. No doubt the cause of the bees starving was due largely if not altogether to the spell of cold weather that prevailed throughout the North, at least, a week or ten days ago. In our own locality we were threatened almost every night with frost and we did have it in two or three instances. During the day it was so cold and rainy that the bees were not even able to fly, and hence it is that reports began to come in showing that bees were starving. Our bees have been working on clover for three or four days, and the appearance of the basswood-blossoms, not yet opened, gives a good promise of honey from them.

Mr. A. I. Root:—Your letter bearing date May 23, and accompanying sample of honey, have been received. No zinc could be detected in the honey sent. The sample was, however, too small to permit the detection of the presence of much less than 50 parts per million, which would be a comparatively large quantity of the metal to be in a food.

As to whether honey would attack galvanized iron used for storage-tanks, etc., that is a matter which would have to be settled by direct experiment. Foods differ widely in their power of attacking zinc; and while I am of the opinion that honey would not exercise much action on that metal, my opinion is subject to revision. It would depend on the fluidity and acidity of the honey to some extent, and also on the access of air. Should a galvanized tank full of highly fluid, acid honey be emptied, and allowed to stand some time before refilling, the conditions would be favorable to the contamination of the second lot of honey, if this food does exercise a solvent action on zinc, as the metal surfaces would be covered with thin layers of honey freely exposed to the air. I should not imagine such action would take place in the case of honey stored in closed cans.

Galvanized iron is frequently used for water service and always gives up some zinc to the water, the amount depending on the length of contact and on the amount of dissolved air. Generally it is very small.

Nothing definite is known as to the physiological effect of small doses of zinc frequently repeated. The metal may tend to accumulate in the system as lead does, though there is not much evidence to this effect. It is certainly not a desirable thing to have in food.

G. L. SPENCER,

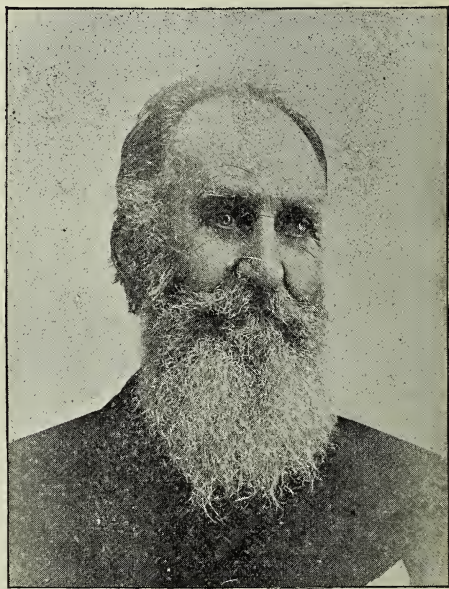
Acting Chief of the Division of Chemistry.
Washington, D. C., June 1.

As the sample was too small to make a satisfactory test, we desire our correspondent, Mr. Fox, or any one else who has honey stored in a galvanized-iron tank for any length of time, say two or three years, to express us, at our expense, a sample of two or three pounds of the liquid honey taken from such cans. We wish to have this matter determined definitely, as it is a very important one to be decided. At present we do not think that galvanized-iron tanks, from the fact that many are using such for storage-tanks, have any injurious effects upon the honey; and you will notice that Prof. Spencer is of the same opinion. The fact is, tin will rust; iron will do the same; copper too expensive; and wood will shrink in California and other hot climates. Galvanized iron is the only material for tanks that can be used for the storage of large quantities of honey.

A. A. RICE.

For many years we have been buying bees of our old friend whom we have called "Neighbor Rice," who lived some ten or eleven miles from the Home of the Honey-bees. Mr. Rice took a start in bees about the time that GLEANINGS was started; and ever since that time he has been a thorough and successful bee-keeper. He loved his bees, it was a pleasure for him to work with them, and no wonder he was so suc-

cessful. He was successful, not only in making them bring in *cash*, but in always wintering them, even when the rest of us lost heavily; and the consequence was, through our heavy sales of bees, nuclei, and queens, to supply those who had lost, we were obliged to draw upon our neighbor for new supplies. He always enjoyed the distinction of furnishing us the nicest bees on the nicest combs, and at the highest price. A number of times, other local bee-keepers have asked why we paid Neighbor Rice more than any one else. Simply for the reason that he took pains with his bees, and was able to furnish us good strong colonies in spring, when others would bring in poorly marked hybrids, weak at that, to say nothing of their being on crooked and unsightly combs.



A. A. RICE.

Well, we have just bought out his entire apiary, and for the last time we shall ever buy of him again—not because the bees are unsatisfactory, but because our friend has passed from this world. He died at his home, west of Seville, O., Dec. 6, 1893, at the good old age of 73 years. From an obituary notice in a local paper we extract the following:

He was one of nature's noblemen in a double sense—over six feet tall, heavily built; and in 63 years of acquaintance with him I never saw him angry nor heard him utter a profane word, nor drink any spirituous liquors, nor use tobacco in any form. He had three brothers. One died young; two lived to manhood; one was in the war of the Rebellion, and was shot in the leg. His father was in the war of 1812, in the Vermont militia, and received a pension; and his grandfather was an officer in the Revolution, and stationed at New York city. Mr.

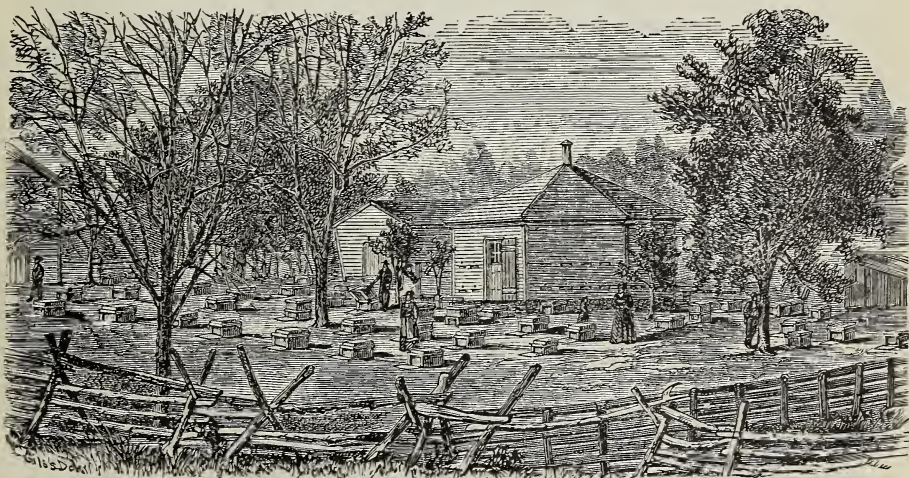
Rice leaves a wife; his only daughter, Mrs. Roxey Wilson, of Edmore, Mich.; and one sister, Mrs. A. V. Eastman, and a host of friends, to mourn his loss.

Years ago, away back in November GLEANINGS for 1876, appeared an engraving showing Mr. Rice's apiary and the house-apiary; and together with it was a short paragraph, both of which we have decided to place before our readers at this time.

It was a pleasant day in October when we—the artist (Mr. Stanhope) and myself—drove up just by the rail fence you see in the foreground, and took a peep at the surroundings as you see them above. Friend Rice was found busily engaged making winter passages for the bees, which operation he performed with a “sharp stick,” and we noted that he got along with it very fast. We soon went into the house-apiary, and, after we had noted the tempting displays of comb honey, we were real

The house-apiary seen in the background was long since discarded, although we believe he continued to use it as a sort of shop. The hives shown in the foreground he was using up to the time of his death, and were still in excellent condition, as was every thing that Mr. Rice had about his bees. He was not a man who believed in letting hives rest on the ground, to rot out the bottoms, nor letting them go unpainted.

Perhaps many of our readers would like to know the secret of Mr. Rice's success in wintering. He always put his bees in the cellar, in the hives you see in the engraving, and always put over the frames a cushion, and over all a cap with a wire-cloth screen on top, for the purpose, as he said, of “letting the bees' sweat pass off.” He did not think it necessary to have a large entrance, but, on the contrary,



A. A. RICE'S HOUSE-APIARY, SEVILLE, OHIO.

glad we came to see him. In the center of the room we found large tin tanks of both linn and clover honey; and as we never like to waste any time we dipped out the honey, first from one can and then the other, while we talked “bees.” You must know that friend R. gets all his comb honey in small sections fitted into his large frames, and the sight of these cakes of honey right before the glass division-boards clear round the room is pretty, we assure you. May Mrs. R. never lose her genial smile, nor be the robust strength that enables him to carry those heavy hives out of the cellar and back, whenever a summery day occurs in midwinter; and when he gets old, may he have an easy-chair in the house-apiary, and find it (the house-apiary) a complete success.

Mrs. Rice has still the same genial smile; but it is a sadder one, through the loss of her life companion. His robust strength did not give way till the silken cord, without any warning, was snapped while he was apparently in his usual health.

regarded it as very important that the “sweat” should have perfect freedom to escape through the thin cushion. The wire cloth was used, not only to hold the bees in the hives during the winter, but also during such times as when he brought the bees up in his bee-wagon to Medina, to sell them at the Home of the Honey-bees.

Mr. Rice was one of those bee keepers whose light did not shine very prominently through the bee-journals, but he was one of those quiet, practical ones who make bees pay. He accepted new theories with caution; and when he found he could winter his bees successfully, nothing in the world could induce him to change his plan one iota. A year ago last spring, after we had given the sealed covers a thorough test, with such unsatisfactory results, he said, with a smile, “I thought you would find out your mistake. The sweat has got to pass off, and it can not do it through the sealed cover.”



HOW TO SUPPORT A FAMILY ON ONE-FOURTH ACRE; A GLIMPSE OF ONE CORNER OF THAT QUARTER-ACRE AS IT APPEARED MAY 16.

May be you will think, from the picture adjoining, that it is a pretty good-sized "family." Well, I am glad it is; and I am glad, too, that the prospects are just now that they are going to be supported quite comfortably. Perhaps I might remark that the greater part of them are the boys of my Sunday-school class. They are at work on the last end of a bed of Prizetaker onion-plants, putting up an order that came all the way from Minnesota, for 100,000 plants. The price received was \$75.00, and, as nearly as I can make out, the 100,000 occupied just about the space of one of those 50-foot beds—beds 50 feet long and 6 feet wide. And this is for a single crop, mind you. The seed was sown March 14. Of course, there was considerable labor in handling the sashes, and there was the expense of, say, two or three pounds of Prizetaker onion seed at \$2.25 per lb., and the cost of taking the plants up. The 10 boys you see in the picture would put up the whole of them in about 10 hours. This would be at the rate of 1000 plants an hour for each boy, or 10 bunches of 100 plants each; 6 minutes for counting out 100 plants, putting a slip of oiled paper around the bunch, and a rubber band over the paper. The boy with a straw hat on, near the center of the group, has a bunch of 100 in his hands. You can see the white roots—that is, if the artist gets his half-tone picture clear enough in detail. I should not forget to mention that, before we had so much rain, keeping the plants well watered was quite a little item of expense. The water is furnished by the windmill and tank on the hill; and before going further I want to say that Ernest succeeded in getting about the brightest and sharpest—especially sharpest in detail—photograph of garden-plants that I have ever seen. As I look at the picture my field of rye stands out so sharp and clear that almost every head is visible. Last year I had 40 bushels per acre on that same ground. You may ask what kind of farming I am at, in having rye on the same ground again. Well, there is a crop of clover down under the rye, that you do not see; and the reason why we have rye again is that, in spite of all I could do, enough grain was scattered through the clover to make the stand you see in the picture. I wanted the clover to grow another season, so I just let the rye and clover grow together. In a few days the rye will come off and the clover will hold sway. The vacant spot on the right-hand side is where the former owner started to make an alley through the lot by letting the townspeople draw away the dirt. When I got possession I stopped the alley business. But they took off the top soil to such an extent that I have not got the clover to catch in the hard clay as yet. The beautiful thrifty foliage just below the rye is our Palmer raspberries. They are now bending with their loads of bloom, and the hum of the golden Italians among the blossoms is indeed inspiring. This side of the raspberries are four rows of strawberries; and next to the strawberries are my dozen rows of rhubarb that I told you about, mulched with stable manure. Then comes a row of grapevines; then tomatoes and cucumbers, and finally we come to the plant-beds. If you look sharp you will see a load of stable

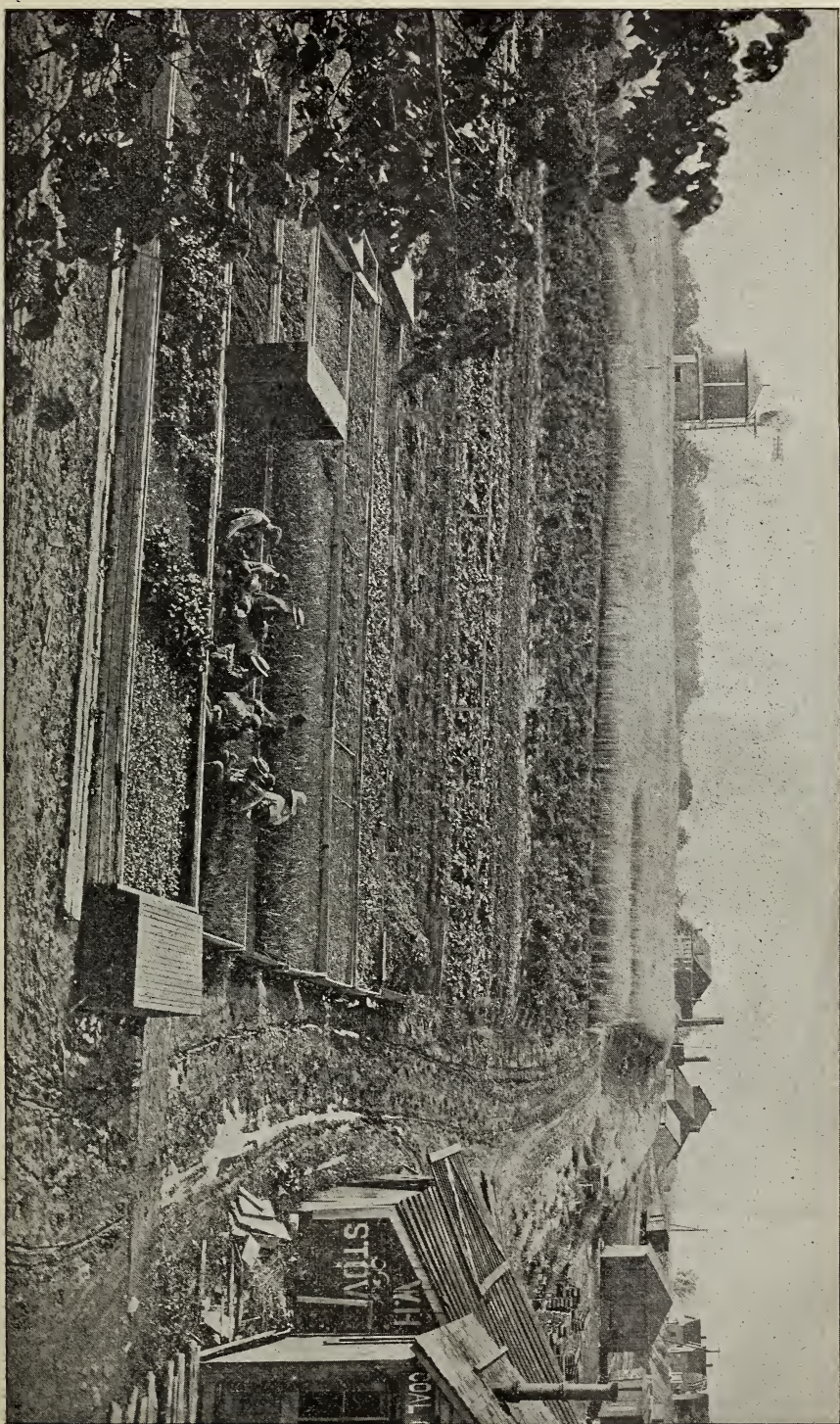
manure adjoining the roadway. During the heavy rains the juice from this heap of stable manure has made the ground dark and rich along the ditch at the end of the plant-beds. The first bed contains cabbage-plants on the right hand, and smaller cabbage-plants, just put out, on the left-hand end. In the picture you get a glimpse of three or four large boxes in different positions. These are slipped over our piles of sash when the sash are piled up at the end of the beds. They protect the sash from the weather, make them secure in case of hail during the summer time; also secure from small boys who might be throwing stones at such times. The box turned on its side back of the boys is set up in that way to shade the plants while they are being packed. Ernest says it was a big mistake in not having it down flat when the picture was taken, as it shades the boys' faces too much. The next bed contains four different kinds of tomato-plants. These different varieties are separated by strips of wood. They are ready to send off. Then comes another bed of cabbage-plants, and then one of White Victoria onions large enough to pull for bunch onions. In fact, some of them are now larger than hens' eggs.

I have not figured up how much money we get from a bed of bunch onions; but at 5 cts. for a bunch containing 1 lb. of onions, tops and all, it foots up pretty well, especially if you keep pulling out the largest and then waiting a little for the others to grow. In doing this you can plant them quite thickly, say rows 4 inches apart and onions 2 inches apart in the row.

We now come to the bed where the boys are at work. Of course, with such a crowd there needs to be a boss; and the young boss you will see at the left-hand side. Frank has been with me so long that he has almost grown into the business. He is so industrious that it is hard work for me to explain to him that, when he is looking after nine boys, he should not undertake to do any other work himself. For instance, the boss should be sure the plants are kept soaked with water, with the rubber hose and sprinkler; then he should see that the boys put up their bundles neatly, without smashing or wasting the onions; that they should not get crowded together, trampling their tools, etc., under foot. Then he must provide slips of oiled paper, rubber bands, moss for packing, and baskets. I tell you, it would keep me busy to have nine such boys work to the best advantage, and save unnecessary motions. The bed in the foreground contains small cabbage-plants at the left end. Next is a cluster of beet-plants that are getting too large for their territory; then some more cabbage-plants, and finally a dozen or more beautiful Dwarf Champion tomato-plants, in bloom; and just beyond the tomato-plants you get a glimpse of a single hill of potatoes grown in our rich plant-garden soil. I think very likely all this mass of foliage came from a single volunteer potato. When a frost threatened night before last, it took one of those big boxes to cover that single hill of potatoes. Just think of it—a hill of potatoes so large in the middle of May that it takes a box 6½x3½x2 feet high to cover it! On the extreme right of the picture you catch a glimpse of our tile-yard, close by the railroad track; also a corner of the coal office. Yes, and there is that mud-puddle, full of water, that I have been piling cobblestones into for two or three years. The traffic of the heavy loads of tile and coal keeps cutting into the mud.* Last, but not

*The very spot where those boys are now at work, and the ground that is now covered with such valuable crops and luxuriant vegetation, was for years an unsightly mud-hole, occupied with all sorts of old rubbish, weeds, tin boilers, old boots and shoes,

A BIRD'S-EYE VIEW OF OUR PLANT-GARDEN, LOOKING NORTH.



least, at the extreme left of the picture you get a glimpse of one of the 100 basswood-trees I planted along the street some ten years ago. Ernest took the picture from one of the upper windows of our type-room, and these basswood branches came out a little in the way.

A word more in regard to supporting that family on a quarter of an acre. You will notice by the tomato-book (p. 100) that the quarter-acre contains just 24 fifty-foot beds. Now, if each one of these beds could be so managed as to give a crop worth \$75.00, say *once* a year, the receipts of our little farm would be \$1800. But I expect to make the same bed that gave that 100,000-onion-plants give us nearly half a dozen crops in the course of the year. We won't figure up *six times* \$1800 just now, however. Alas for the imperfections of the best-managed of human schemes! The whole fourth-acre may possibly give \$1800 in a year—yes, may be twice that; but I presume I pay out for labor, seeds, and manure—to tell the truth, I do not know how much—probably somewhere between \$500 and \$1000. With the many other busy cares devolving upon me besides that plant-garden, it is impossible for me to give you accurate figures. I can give you only glimpses of the possibilities in this line of work; and every city of 1000 inhabitants or more should, in my opinion, have at least one such plant-garden.

Now, before I close let me consider a little the text I have put at the head of our editorial page. It does not refer to onion-plants—at least, not particularly; but, O dear friends, it does refer to that group of boys who are looking to me, not only for directions in regard to their work, and for their pay every Saturday night, but when Sunday comes they are looking to me and *depending* upon me for something of more importance. May God help me to be faithful to this precious charge. The boys attend school, of course, five days in a week; but they are on hand almost every morning between five and six. Some of them would come before five if I permitted it, and they work till the schoolbell rings. When school closes in the afternoon their arrival is heralded by pattering footsteps and boyish voices. They are so glad to get outdoors after being kept in the schoolroom that their wayward feet are likely to go into the mud, and may be on the plants; but for the most part they work with such a hearty good will that I should be ashamed of myself if I could not overlook their boyish blunders and mistakes. I do not know whether they know it or not; but I love them—every one of them—and it really gives me pain when other boys come and beg to be taken into this class, to be obliged to keep refusing them, day after day. What pay do they get? Well, the youngest ones get 4 cts. an hour; the most of them 5, and a few of them 6. Frank, the one who bosses, commenced just as they did, but he has now got up to 11 cts. an hour. When I decided I could afford to pay him 11 cts. I do not believe he felt any happier about it than I did.

There, friends, I have found a good deal of fault in some of my past writings with these boys God has given me for helpers; but I feel rather happy, at the close of *this* talk, to think that I have not found any fault at all with anybody. By the way, I must add that this sort of drill that these boys are getting is, without any

mistake or question, fitting them to be useful and valuable members of society; and, oh it is so much better to have them busy, and in love with this kind of work, than to be roaming about the streets and learning mischief. May God help us all in the care of the boys of this our native land!

“THE NEW CAULIFLOWER CULTURE.”

Well, why not? We have had the “New Onion Culture” and “New Celery Culture;” and my experience would indicate that there is more money in the New Cauliflower Culture—that is, for intensive gardening—than in either of the others. Get good strong plants in February or March, and set them in plant-beds made very rich. In fact, I think our plant-bed was at least one-fourth rich old stable manure, and it was spaded down perhaps a foot and a half deep. Now set your plants in these beds, a foot apart. The spacing-frame described on p. 426 does this nicely. After the plants get to be well rooted, no other covering is needed to protect from frost than cotton cloth. I did not feel quite sure the plants would make nice heads so close together; but they have made the very finest I ever saw. The large leaves filled the whole bed completely full, and the heads were down in among them so that they were perfectly blanched without any tying-up of the leaves at all. In fact, they were regular Snowball cauliflower. For the first and finest heads we got 25 cts. per lb.; but for the smaller ones, and those not quite so handsome, 15 cts., and finally we came down to 10. We marketed them all through May. I have tried Wakefield cabbage on the same plan, but it was not a perfect success. My impression is, however, that I did not give them a full foot of space between each plant and its neighbor. I am going to test the matter again. The advantage of crowding them so close together is, that it is but little work to cover them, and no trouble at all to weed and cultivate.

PROTECTING FROM FROST—TWO SIDES TO THE MATTER.

And speaking of protecting plants reminds me that, two or three times during the latter part of May, our Weather Bureau admonished us that the conditions were favorable for frosts. At two or three different times we put on sashes, and carried potato-boxes and squash-boxes, until I expended from three to five dollars in covering and uncovering. Now, the question is, would a light frost have done that amount of damage? I think there is an extreme both ways in the matter of covering stuff. Friend Gault told me of making a smudge of wet straw, to shield his early potatoes. He got up at one o'clock at night, and saw by his thermometer that there was danger ahead. The straw had been placed in piles the night before. He raised a smoke and fog sufficient to envelop his whole patch of potatoes, and kept up the smudge until he happened to look overhead and found he could not see any stars—that is, when he got outside of the smoke. Then he noticed a cloud was doing the work for him, and he went back to bed again. Our barometer told me, the night before, that rain was coming, so I did not cover up any thing this time, and nothing was harmed. Where plants lie in beds so a cloth sheet can be quickly rolled down, the expense is, of course, nothing; but where you have to carry bushel boxes or sap-pails, and turn them over tomato-plants or hills of cucumbers, it is considerable expense. Besides, if the ground happens to be damp, as it has been for the past two weeks, there is a good deal of tramping that I have begun to think is almost as bad as a light frost.

etc.; and I confess that I have greatly enjoyed the work of making this unsightly spot bud and blossom; and you, dear reader, can take any bit of waste ground—that is, providing it gets the sunshine—and do as much. If it is close to the highway it will do its own advertising; and if it is close to a town or city, the space will be all the more valuable.

SOWING GOOD SEED, ETC.

Please find inclosed the price of GLEANINGS for one year. It was not for the want of funds that I did not remit earlier, but because of an internal commotion within my breast on account of that Evergreen sweet corn I ordered of you one year ago. The corn looked so nice and good I planted without testing, and you may judge of my surprise, after waiting anxiously for some time for it to make its appearance, to find that much less than half ever sprouted, and I had to replant with another variety, which made the crop late and very unsatisfactory. You may judge of my feelings when it came to mature, with such large beautiful ears, and such a heavy growth of blades and stalks. Well, I have wanted to say some awful big "swear words," but I had just signed the Juvenile Pledge not to swear or use any other bad language. I can hardly restrain myself, even at this late day, from using very expressive language. I have waited and watched GLEANINGS for a bad report or good report from some other lucky or unlucky individual, for I have been in a miserable state of mind all this time. I think I shall feel better after freeing my mind in this somewhat restrained manner; in fact, I begin to feel better already, after stating these facts, and forming a firm resolution to never again plant corn without testing the seed.

H. S. TUCKER.

Freeport, Iowa. May 30.

[Many thanks, friend T., for your very frank and outspoken way of stating your grievance; and I am very glad indeed that you held on—at least, until you looked at the point in all its bearings before using the "expressive language" you allude to. I do know what a serious matter it is to lose a crop just because the seed was not strictly first-class; and I, like yourself, have resolved again and again not to offer any thing for sale until I had first thoroughly tested it myself. Every season I am importuned and urged to offer for sale this, that, and the other, that is recommended with the strongest testimonials; but I have always replied, "Not until I have grown the thing on my own grounds." This course makes me behind the rest of the world, a good many times, on valuable new varieties, say of strawberries and garden-seeds; but I would rather be behind the times, and be sure.

Now about that Evergreen corn. Please observe, we have never advertised nor recommended Evergreen sweet corn at all. My attention was called to it on account of the excellent quality of the canned corn grown and put up by the Lake-shore Canning Factory. So many wanted seed that would grow corn equal to that in those cans, that I wrote to friend Cummings about it. He told me he purchased the seed of C. F. Clark, Wakeman, Huron Co., Ohio. Accordingly I purchased four bushels of the very kind that friend Cummings plants year after year for his canning-factory. I offered it to the readers of GLEANINGS with the above explanation. There has been but one complaint besides your own, friend T.; and if you have written to me in reference to the matter before, this other complaint I allude to may have been from yourself. It is true, our own planting did not come up well; but neither did any of our sweet corn last season, planted at the same time. The excessive wetness just after planting time was, I supposed, the reason why the seed that was planted rotted in the ground. This may not be true, however. If friend Clark sent me exactly the same kind of seed he furnished to the canning-factory, and they had a good stand of corn, I should be inclined to think the failure due to some other cause.

At the close of your letter you strike upon a very important fact—not in corn-growing, however, but in something far more important. You say you have been in a "miserable state of mind." Who is there who has not been through this same experience? And you say, again, "In fact, I begin to feel better already." I presume many others have also been through this experience. In fact, I wish more of us had. This seems to be true: So long as you dwell on a wrong you have received from somebody, and brood over it, so long you are miserable. But when you go to the one who has wronged you, and in a kind, neighborly way, state the case, then you begin to feel better right away. I have a great many times put it this way: Before I am harsh or severe, I will put the matter very gently, and see how Mr. So and So takes it. If, after having put it very mildly, I discover that there are no extenuating circumstances, then, but not before, I will bring in the "heavy artillery" that I have had in mind. I suppose the very "expressive language" you say you felt like using would be the "heavy artillery" I had in mind. Well, I hardly need say that the "heavy artillery" is almost never required at all when we go about it in this way.

In conclusion, friend T., even though I do not grow the Evergreen corn, nor advertise it in our price list, if you feel certain that your loss was caused by poor seed, I will try to do what you think would be right and neighborly in the matter.]

A. I. R.



ON THE WHEEL.

"Hello, boys! there comes a locomotive right off through the lots, and into our berry-patch. Just look!"

"Well, now, that is A. I. Root on his wheel, I'll bet a dollar; for there ain't another man around who would undertake to run a wheel off through the lots in this style."

By this time I had caught up, and was shaking hands with the man who called me a locomotive, and then we had a good laugh as I shook hands again with our old friend Dan White, whom our older readers will recognize as no small authority on bee culture in years past. Mr. White is also in love with strawberries and other small fruits. In fact, when I was away back in the road I was speculating whether I had time that morning to go off to the back end of the farm to see Mr. W.; but when my eye caught sight of the beautiful green rows of wonderful luxuriance off on that gentle slope, I concluded I should have to go over there for a few minutes any way. The beautiful crop was strawberries—two rows of Crescent and then one of Jessie, and so on through the patch. Even though it was only the 29th of May, many of the Jessies showed their red cheeks through the green foliage. I did not wait to be introduced to the strawberries, nor even to be invited; but I commenced picking those great big fellows, and biting off the bright-red side first. I have thought before that I liked the Jessies better when they were red on only one side; and that morning I thought so again. Mr. White says he has never found a better fertilizer than the Jessie; and, judging from his stand of plants and show of berries, I should call the Jessie all that was ever claimed for it, on his premises. His soil is

just perfection for raising strawberries. It is new land. In fact, these berries are the second crop since the woods was cleared off; and the woods dirt has been mixed thoroughly with the natural sandy loam; and through it all there is a sprinkling of gravel—just enough to produce the kind of soil that strawberries revel in. I do not know why he sticks to the Crescent when we have so many other new pistillate varieties; but I notice that a great many of the veterans are sticking to the old Wilson and the Crescent.

Mr. White has been putting in some under-drains recently; and he was full of enthusiasm, as well he might be. As we walked along he told me how he had been thinking for years that he could not *afford* tile drains; and in one place he drew in a hundred loads of soil to fill up a cat-swamp; but as *this* did not get rid of the wetness he finally put in tiles; and now he says he just fooled his time away when he carted in that dirt. His man (the one who called me a locomotive) was cultivating the berries with the new Planet Jr. twelve-tooth harrow; and when I began to object that he was running the outside tooth too deep, so close to those thrifty young strawberry-plants, he and his employer both insisted that it did no harm. Said friend W., "Mr. Root, you always plant your strawberries with a spade, do you not?"

I told him I had used the spade a few times, but our boys did a good deal better where the land was marked out so as to make a furrow of just the right depth so as to spread the roots and then pull the dirt around them. But Mr. White declared he could set plants ever so much faster by setting a spade in and then spreading the roots of the plant out fan-shaped; and, furthermore, by the latter plan they could cultivate within an inch of the plant and not tear any roots, even if they went down to a considerable depth. I was obliged to own up. By the way, is it not funny that each man has a plan or system of his own, and that each one manages so well by his own fashion of doing things? At the end of the row of newly set strawberries were some rows of blackberries. Now, the man who was cultivating, instead of going clear through the blackberries to the end of the lot, turned around when he had got to the end of the strawberry rows. I do not know that his horse stepped on the plants, for he did nice work with his cultivator; but yet he turned his horse around in the middle of the lot when there was more cultivating to be done, right ahead of the horse. Now, it may be that people have good reasons for their own methods of management; but when I looked out of the car-windows that morning and saw little patches of fruit and various kinds of garden-stuff right out in the middle of a lot, I could not help thinking that, notwithstanding the multitude of agricultural papers and agricultural teachers, the mass of our farmers have not yet seen the figures given so often in regard to the amount of time it takes to *turn a horse around* and go the other way. Why, if you have a quarter of an acre of strawberries in a square patch, it takes more time to turn your horse around than to do the cultivating; and why in the world do so many persist in having little square patches when they might have their berries and every thing else in long rows the whole length of the lot? In riding 40 miles that morning, I do not believe I saw crops of any kind put in in rows as long as the field would permit them to be made. In fact, I saw one man cultivating a patch of potatoes that was perhaps three times as *long as wide*, and he had short rows running *crosswise*, and was cultivating back and forth, and tramping up

ever so much grass at each side where he had turned around. I confess it looks rather bad for me to criticise friend White's management and methods when he has a better showing of a good many things than I have. But I wish he would tell why he did not plant his raspberries, blackberries, and strawberries, in long rows instead of having so many square patches, and not any of them the whole length of his long fields. We had so much to talk about just then that I did not mention it.

I began to tell him I was going over to see friend Gault's new raspberry; but we had to look at this thing and then at that thing, and then questions were to be asked; and just as he went to hitch up his great stout young horse, that he and I might *visit* while we went over to friend Gault's, he told me there was one more thing I *must* see. It was a patch of American Wonder peas. I think they were the finest I ever saw—a perfectly even stand, and very few "rogues" among them, or tall peas sticking away up above the dwarf Wonders. He had such a good-sized patch that I said at once, "Look here, friend W., you paid out a big lot of money for that American Wonder seed, this year, when it is so high, did you not?"

"Why, no, I did not, Mr. Root. The high price did not affect me at all, for I *raised* the seed myself."

"And did not have any bugs among them?"

"I did not have a buggy pea in the whole lot."

"Well, what did you do to get rid of the bugs?"

"Well, I didn't do any thing; but I had some seed that was not buggy, and I planted it about the first of June, thinking that, if put in so late, I should probably escape the bugs, and I did. One reason why I wanted to raise my own seed was, that I wished to see if I could get rid of those occasional tall peas, by picking those out and using for the table, letting only the dwarf Wonders ripen for seed."

Now, friends, what is the use of sending away off to Canada for our seed peas, in order to get them free from bugs, and paying \$6.00 a bushel (as we did this year) in order to get genuine American Wonders—that is, if we can grow them in our locality, free from bugs? I believe we can do it, and I for one am going to try it. Perhaps, if we get the hang of it, it is after the same fashion that Wilbur Fenn manages to avoid bugs and blight with potatoes.

I left my wheel at the depot somewhat reluctantly, and we started for friend Gault's. Neither friend W. nor I had figured on the amount of time we had spent in visiting until he asked what time I must be back to get my train home. I told him I must be back at half-past two. He pulled up his horse, saying:

"Why, my dear friend, it is 7 miles to Mr. Gault's, and 7 miles back again. My horse, with these rough roads, would only just about make it if we did not stop to visit at all, and you have not had your dinner."

We were in a fix, sure; but I told him I could make it on my wheel, and have time for dinner and quite a little visit besides. I did so in spite of the bad roads, and stayed an hour and a quarter at friend Gault's, getting around to the depot five minutes before 2:30. When I got there, sure enough there was friend White waiting for me, and as I wheeled up he said:

"Well, now, I felt so sure you could not make it, even with your wheel, and would miss the train, I came up with the horse and buggy to take you back to stay with me over night."

Well, he slipped up on his generous plans for my comfort and entertainment. But there is a moral right here. Don't you see, friends, that, by the aid of this new Aladdin's lamp in the

shape of the modern bicycle, we are enabled to make a great many appointments, and to transact a large amount of business, besides getting lots of enjoyment that would be impossible without the wheel? In fact, the modern wheel gives us more years of life—yes, in two ways at least. It enables a man to accomplish more work every day, and it gives him strength and energy to actually “run away from his funeral,” or, in other words, to push the funeral off indefinitely. I do not mean to be irreverent, but I borrowed the phrase from one of the wheel circulars, and it has seemed to me to express a great truth.

THE GAULT EVERBEARING RASPBERRY.

Friend Gault had given up seeing me that day, although I told him I was coming; but he was very glad notwithstanding; and when I looked at his old original patch of Gault raspberries—the ones where the bearing wood stood up three or four feet high, I did not wonder he wanted me to see it. There were the greatest masses of raspberry bloom I ever saw in my life, and they were humming with bees. And this, mind you, is the first crop only—the crop on the old wood of last year's growth. After this is gone, and the old canes that have borne the crop are cut out, then comes still another crop, prolonged continually till frost; and the last crop on the new growth of wood consists of finer and larger berries than the first. I do not know whether the quantity is equal to the first or not—perhaps not. This old original patch has been pretty well manured; in fact, I do not see how such quantities of bloom could be produced otherwise; but on his new plantation, where he raised the plants last year, and is preparing to raise new ones this year, there was not manure enough so that I could discover any of the effects of it, nor the manure itself, in the soil. It was just fair potato ground, and rows of nice potatoes were already growing between the rows of raspberries. Well, I looked at the thrifty young plants, admired the strong sturdy shoots (many of them just bursting through the sandy loam), for about half an hour, and I asked questions innumerable; but for all that, I confess I do not exactly understand the whole mystery of the habit of this wonderful plant. One thing is certain: It has such a pertinacity (if that is the word) in bearing fruit in season and out of season, that blossom-buds keep pushing out on the old and new wood. For instance: Quite a number of the readers of GLEANINGS have purchased one or more plants. You put them in the ground, and in a little while a raspberry-shoot came up. When a foot or more high, it commenced to put out blossom-buds. Well, this first shoot comes from the short stem on the old wood, and behaves itself like old wood. Two or more of these stems may push out, having blossom-buds on them; but after a while the stronger and ranker shoot will push up from the root itself. These were just pushing out in considerable numbers; and this is the new wood, or new growth. The two may be distinguished by the time of starting, and by the figure and color of the plant. The new growth is a much stouter plant, and of rather different color. These grow around the first shoots, which come from the old wood; but eventually they, too, proceed to bear fruit, not only from the tip end of the central shoot, but on the branches that come out all the way down, sometimes clear down to the ground; and if we have much rainy weather, the many clusters of berries will have to be mulched with straw, or something of the sort, to keep them out of the dirt. I suggested stretching a wire a foot and a half or two feet

from the ground, and tying up these clusters to the wire.

Now, if you let the vine bear fruit all it wants to, you will never get any young plants. It will just keep bearing fruit, and increasing, until it becomes a great clump of roots and shoots; but if you wish to get new plants you must pick off the blossom-buds; then you can get new plants by layering. This is the plan in outline; but should you visit friend Gault, and see how he manages, you would find more queer things coming out here and there than you expected. His young plants occupy now about two acres of ground, and he says he is actually obliged to do every bit of hoeing in this patch himself. He says he does not know of a man or boy who would not chop off those precious shoots together with the weeds, when they were just pushing through the ground around the hills. And, by the way, I presume I have lost something in that way already by letting the boys hoe *my* bed of Gault raspberries.

Prof. W. J. Green, of the Ohio Experiment Station, is to visit the place when the first fruit begins to ripen—probably about the first of July; and it is to be my privilege to be there with him.



If thy brother shall trespass against thee, go and tell him his fault between thee and him alone; if he shall hear thee, thou has gained thy brother.—MATT. 18:15.

Dear Mr. Root:—I write to let you know how much pleasure your different articles on Christianity give me every month. There is only one fault with them—they are not long enough. I always hate to come to the end of them, for they are very instructing to me. Speaking of what you did in the last GLEANINGS, May 15, reminds me that I wish you would some time tell us how a person ought to feel and do, who has those around him who are stealing and backbiting. I mean, I suppose you know, on the Christian side. I know you have had papers pretty nearly on such a subject, but not quite in this line. You know how natural it is to have no heart for anyone who is nice and pretty before your face, but different when your face is somewhere else. Now I should just like to know what a Christian feeling should be toward such a one as that, and especially if, with all the rest, they are actually *stealing* from you. Could you be very friendly or loving toward a person who does that way? and how? If so, I should like to know. If you had ten pages in this line in your paper it would not be any too much for me; for when I first begin your articles I keep reading till the end comes, and am sorry when through, as I have told you before; for it speaks of what people who want to be right should do, and tells how to do. ANNIE BULL.

Meriden, Conn., May 15.

My good friend Annie, you pay me a rare compliment in the above kind letter, especially where you say that these Home Papers and Neighbor Papers tell what people should do who want to do right. May God help me do this. If my many experiences and trials have fitted me to teach in the line of righteousness, and if I indeed have a natural gift in this direction, may God bless and sanctify that gift, and baptize me with his Holy Spirit, that I may teach aright! In the first place, my dear young friend (for I take it for granted you are but a child comparatively, even though you love righteousness and hate iniquity), let us be sure that the prince of darkness has not got into our own hearts, and persuaded us that people are worse than they really are. It seems to me the

great besetting sin of the world—in other words, the great stronghold of Satan—is in making us magnify and enlarge the faults of our neighbors, and inducing us to jump at conclusions. It is an awful thing to steal from one's neighbors. We ought to be careful how we use the word "steal," in just the same way that we should be very careful how we use the word "lie," or call people liars. Nothing but the most extreme and aggravated cases should authorize us to use these severe words. A great many times in my life I have decided, "Here is a clear case of stealing, and nothing else; there can be no mistake about it." Notwithstanding, however, remembering past experiences of where I jumped at conclusions in such matters, I decided to commence by being very mild and gentle. In fact, I have a good many times gone to the offender, and chosen my words with such gentleness that it seemed to me for a time almost as if I was making a hypocrite of myself in not being outspoken and plain, and calling things by their right names. But later on, again and again I have been, oh so glad! that I did not call folks thieves and liars. A case is right before me now.

Our people here now all get their pay at the bank. The time-clerk figures up the number of hours they have worked; and Saturday night, as they stop work, they get their check on the bank. A young man came to me a few days ago, saying his envelope and check could not be found, although the time-clerk knew it was made out. I told him it was probably given to somebody else by mistake, and that we should hear from it in a day or two. Finally he went to the bank, and, sure enough, there was the check duly paid. It was paid to another young man. The case *seemed* to be very plain and clear. The offender had discovered that two checks were given him instead of one. He presented them both; but when an explanation was required, he said the absent party had desired him to get the cash for him. As this latter is frequently done—that is, as one workman frequently goes to the bank and draws the cash for one or more of his comrades—nothing would be thought about it. But the one who lost his wages told me that he was not even *acquainted* with the boy who drew his money. As there were over a hundred at work for us, he did not even know there was such a person, in fact. Now, I was foolish enough to forget former experiences, and to denounce the absent friend before I had looked into the matter, or had had further explanation. I mentioned the matter to the foreman of the wood-working rooms. He said right off something like this:

"Why, Mr. Root, there must be some mistake about this. This person is a married man, and in good standing, and he certainly would not tell such a falsehood for just a few dollars when he knows the whole thing must be found out very quickly."

This seemed reasonable, it is true; but I think I must have been in an uncharitable mood, for I replied:

"Yes, I know it; but people do just such foolish things in a most unaccountable way, when the evidence is as plain as daylight that they would be found out in just a few hours."

Now, I want to make a little confession further. As soon as the above charge was made against the young man I began going back and recalling every circumstance I could in his history, to prove that he was vicious and unprincipled. What makes us in such a hurry to think evil of anybody, especially when circumstances seem to be against him? Why, the plain truth is, it is simply the work of the prince of darkness, who goes about as a roaring

lion, seeking whom he may devour. At such a moment he creeps on to us and whispers all the evil things he can suggest; for it is his whole business in life to pick at folks, and find faults in their character—to set neighbor against neighbor and relative against relative. My good friend Mr. W., however, was not disposed to drop the matter right there. He is almost as sharp and keen as a detective in unraveling mysteries, and he took hold of the clews I had given him, and commenced reasoning as follows:

"Look here, Mr. Root, one of the boys is named Clare, and the other Carl. These are their first names. Now, your time-clerk, and the cashier at the bank, might easily mistake one for the other. Their second names are Barker and Rieger. Both end with *er*; and a capital B might be easily mistaken for a capital R. Carl must have drawn Clare's pay; and as the amounts due both of them were nearly the same, neither he nor anybody else noticed the difference. Let us go right in to the time-clerk and see if Carl's proper envelope and check are not *still* there uncalled for."

In a few minutes it was found awaiting its owner. I have never investigated where the part the above came from in regard to what the bank clerk said about Carl calling for Clare's money. It is not worth while, for it is evidently a mistake, like the other part of it. Nobody had done any thing wrong in the whole transaction—in fact, nobody was even *thinking* evil.

Now, there are thousands of quarrels and misunderstandings, and perhaps lawsuits, that come about by an accident like this. Sometimes they are easily unraveled; and at other times they may, perhaps, always remain a mystery. During the height of the strawberry season last year, the proceeds of nearly a load of strawberries were lost, and all our efforts up to the present time have been unavailing to detect where the loss came in. I am perfectly satisfied that my men and boys were entirely innocent and honest. If there were any pick-pockets in Medina I might think that one of these light-fingered genies picked the money from one of their pockets.

Once more: Before we adopted this plan of sending our workmen to the bank to get their pay, one Saturday night, when toward \$1000 in cash was brought down from the bank, about \$40.00 had disappeared. It has never yet been found, nor has any trace of it ever come to light. The money was all handled by honest, faithful women, who would not take a copper any more than I would. And such things do happen more less in business. The lesson to me was, that money should not be handled in that way. Our banks and banking institutions are the proper places for money. It should go there whenever the amount gets to be sufficient to tempt people, and it should stay there till the owner calls for it. Since giving our employees checks on the bank, instead of handling so much loose money, I do not think we have lost a copper.

I have gone into all these details because it points out that proper methods of doing business will not only remove temptation from those who might be tempted, but it will greatly lessen the chances of mistakes and loss.

In the two cases I have mentioned above, it would seem quite clear that somebody had been stealing, and we might decide in our minds pretty nearly who the person or persons were. But even with very plain evidence we might make a mistake. In fact, a great many times something, perhaps long afterward, transpires to show that there had been no stealing at all. For instance, several months after the loss of the money during strawberry time, Mrs. Root

found a wad of bills in one of my pockets that I very seldom use; yes, and when unrolled there was \$25.00, and I do not know, even to this day, where that money came from. I can not well see how it could have any connection with the money received for the strawberries, but still it might have had. The very best and most careful of people are sometimes taken with fits of absent-mindedness.

Our text tells us to go straight to the person whom we think has wronged us, and to himself alone, and talk it over. Oh if people would only do this, instead of talking the matter over with some neighbor or somebody else! It may be well to ask counsel of some Christian person; and, in fact, I know by experience that it is a very safe thing to go to the pastor of your church. Tell your minister all about it, and ask his advice. But, above all, go to your neighbor *himself*. Why. I have known people who were really bad—yes, those who had been tempted to steal—when appealed to in a Christianlike way, to feel so ashamed of themselves that they owned up their offense; and this shame, to think they had been found out, and reproved in a kind and Christianlike way, I verily believe made them *more* sorry for their sin than if they had been fined or put in jail. A detective will tell you to be careful that your evidence is as strong and clear as you can make it before you charge the person with the wrong.

A great many times I am told that some of our people here are doing wrong. Where it is *possible* to do so, I always prefer to wait till I can see the offender committing the offense; then when I go to him and tell him plainly and kindly that I know what he has been doing, almost the first words are, "Who told you so?" or, "Somebody has a spite against me, and has been telling you this to get me into trouble." The offender generally watches me narrowly at this critical moment to see if he can find out how much I really know about the matter. If, however, I am able to say, "Look here, Johnny, nobody has told me; I came up behind you when you did not know I was around, and I purposely let the matter drop until I could see you by yourself, and talk to you about it—I have not mentioned the matter to any one, and nobody knows any thing about it except you and me," then if a person who has committed a wrong *ever* feels really thankful, such offender at such a time almost always begins to feel glad that it is only between himself and myself—especially if I have done my duty as a Christian so far as to convince him by this time that I am his *friend* and not his *enemy*. And then what a feeling comes into the heart of the servant of Christ Jesus—a feeling that seems almost as if spoken in words, "Well done, thou good and faithful servant!" The reason why this feeling comes is, that you have fulfilled the command expressed in our text, "Go and tell him his fault between thee and him alone."

Now to the main question: How shall we treat a person whom we have reason to believe is hypocritical, or, if you choose, one who is really guilty of the habit of stealing? I admit this is a difficult question to answer. There may be circumstances when we should not at once follow the injunction of the text, and tell him plainly of his fault. I often meet such cases. I want to see the person alone, and sometimes it can not be managed without drawing suspicion toward him in a way that I do not think best. I often let the matter pass until an opportunity occurs to see him by himself. If a person is wronging me in this way, I do not think it wise or best to refuse to speak to him, at least in a civil way. Neither is it right to treat him just as cordially as if nothing of this kind had happened, for this latter course would

strengthen him in his notion that he was escaping detection, and that he was altogether "too smart to be caught." There is a golden mean between these two extremes. I would be civil and courteous to everybody, and I would, under *some circumstances*, even shake hands with a man whom I knew was stealing from me day by day. But I should not want this state of affairs to continue very long. If the person in question should notice that you have not been as cordial as usual, and should ask you for an explanation, then you have an excellent opportunity to speak plainly. If there is a mistake, or if there are any extenuating circumstances, he will, if you deal gently with him, usually state these circumstances fully. Some may say that there may be no extenuating circumstances for stealing. Well, in one sense that may be true. I think it bad policy to take the ground that people are excusable for stealing and lying. I do not like such doctrine. But often there are extenuating circumstances. There are reasons why we should "deal gently with the erring." One of the reasons urged most frequently is, that somebody has wronged you, and that the only way you can get your just dues is to steal it back again. That is bad philosophy. Neither the laws of our land nor those of God give any authority for such a plan for getting your just dues. A good many people have an idea—especially in these latter days—that they do not receive adequate pay for their services, and therefore excuse themselves for pilfering from their employer; and the same logic is used toward railroad companies, or even toward the government of the United States—but it is Satan's work—the whole of it.

In regard to this matter of treating people whom you know to be enemies in sheep's clothing, I think I have erred in going to both extremes. I have been so gentle and kind to those who were wronging me that it was like casting pearls before swine. They looked down upon me, and presumed so much upon my good nature that finally I decided that forbearance had ceased to be a virtue, and then I swung over quickly or too far to the other extreme, and showed them that I could *fight* as well as pray for those who persecuted me and said all manner of evil against me. My conscience troubled me at first because I had been too *easy* with the transgressors, and then at last it troubled me because I had been too *harsh*. The Bible tells us that we should be as wise as serpents and harmless as doves; and it is *indeed* a pretty narrow path to take just the golden mean. The path to righteousness is *indeed* a straight and narrow one, and it takes more than human strength and wisdom to swerve *neither* to the right nor to the left. It takes help—it needs help from Christ Jesus; and we may rejoice that we have the promise, "Lo, I am with you always, even to the end of the world."

Sometimes it seems impossible to decide positively just whether a person is guilty or not. I remember of having quite a long talk with two friends of mine. There was guilt and crime between them. Evidently one of the two was guilty, and the other was innocent; but each one was so positive that I gave it up—I could not decide which was guilty and which was innocent. Finally I said, "Boys, let us drop the matter right here. Please believe me when I tell you it is best not to say a word more about it until some future developments shall decide. I will try to regard you both as innocent until circumstances shall determine." One of the two proved to be straightforward and honest, and is now. The other, from that time forward, began to show by little incongruities

and discrepancies that he was not strictly honest. When Satan gets hold of an individual he never lets go; and one who succeeds once by prevarication and falsehood will soon get into trouble again in the same way; and his future conduct often decides the question quite plainly whether he was guilty or innocent. In view of this, oh let us strive and work hard! "Blessed are the pure in heart, for they shall see God." The one who holds fast, through all sorts of trials, to strict honesty and integrity, will draw nearer and nearer to the great God above; while the one who commences by deciding that falsehood is sometimes better than truth, gets further and further away, as the years pass on, from the God who made him.



JAPANESE BUCKWHEAT.

We have been able to supply all demands for seed, though we might have sold more if it were possible to name a lower price. Those who have seed for sale are holding for a good price, so we are not able to offer any better prices than named in our last, which are, 50c per peck; 85c per half-bushel; \$1.50 per bushel; \$2.50 for 2 bushels; \$13.50 for 10 bushels. We have it in stock, and available at several points east and west at these prices.

DECLINE IN BEESWAX.

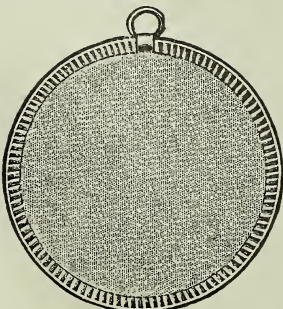
Since the cold wet weather in May, which seems to have been quite general, and which has had a depressing effect on bee-keepers, orders for all kinds of supplies have dropped to a very small volume. The demand for foundation has decreased, and supply of beeswax more plentiful. We therefore mark down the price we will pay for average wax, delivered here, to 23c cash, 26c in trade, until further notice. Selling price of refined yellow wax in small lots will be 32c per lb. Ordinary market wax, 30c.

IMPORTED QUEENS.

Some three or four weeks ago we received a consignment of imported queens, all of them extra fine ones. They have now been in the apiary a sufficient length of time for us to test them to see whether their bees are well marked, and also to see whether the queens themselves are prolific. Price for the best imported, during June, \$6.00; July, \$5.00; fair imported, \$1.00 less. The queens as well as the bees are rather of the leather-colored order. They are extra honey-gatherers, and we have never seen any stock quite so gentle and easy to handle. We have taken pains to get our queens from that portion of Italy where the stock has the above mentioned qualities as far as possible.

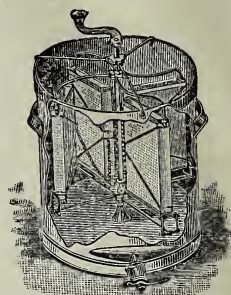
AUGITE STOVE-MAT.

We must surely have reached the bottom on stove-mats this time. We are now able to offer them at 10c each; 2 for 15 cts., or 4 for 25c; 65c per doz.; \$1.80 for 3 doz.; 6 doz., \$3.50; 12 doz., for \$6.50. By mail, 5c each extra. Here is a chance for canvassers to make a nice profit, and bring a blessing to the homes where they sell. We still handle the original augite mat, which we consider superior to all its imitators.



STANLEY AUTOMATIC EXTRACTORS.

We still have left of the Stanley Automatic extractors 3 four-frame machines. We got these with other stock when we bought out E. R. Newcomb some three years ago. We had originally some 20 or more machines, and the stock is now worked down to 3 four-frame. The regular price at which these four-frame machines sold was \$20, without gear. We offer these, to close out, at \$10; or for \$14 we will put on the jewel gear used on our Cowan machines, or one of that pattern. This machine, with gear, used to sell for \$28.00. Remember, we can not duplicate these prices when these machines are sold. If you want one, order at once.



BUSH LIMA BEANS.

Now is the time to plant them; and as we have yet quite a little stock on hand, we offer them for the remainder of the season at about the price of pole limas; viz., \$2.50 per peck. In smaller quantities we will furnish them at 40 cts. per quart. This refers to either the Kumerle or Burpee's bush lima. The Kumerle is no doubt the richest and most luscious lima bean in existence; but the Burpee bush bean is larger, and will, perhaps, give a larger crop for field culture. Should you order, please refer to this special offer in GLEANINGS for June 15.

PLANTING POTATOES DURING THE LAST OF JUNE.

On a recent visit to Wilbur Fenn's I found that his large crop of Monroe Seedlings was planted the last week in June instead of the fore part. Well, our Monroe Seedlings are now all sold out, but we have yet left about 30 bushels of Freeman potatoes, and these are still earlier than the Monroe Seedlings. I think they would mature a crop nicely if planted, say, the 4th of July. Until they are closed out, we offer them for 50 cts. per peck, and this is just about the price of new potatoes just now. My impression is, that our old Freemans are nicer for an eating potato than the greater part of the new potatoes on the market.

FUNGI AND FUNGICIDES, BY CLARENCE M. WEED.

A beautiful book with the above title, from the O. Judd Co., has just been placed on our table. It considers all fungoid diseases that affect our grain crops, fruits, and vegetables, and gives directions for treatment to eradicate the trouble so far as our experiment stations have succeeded up to date in combating these enemies of agriculture. Every fungoid disease that has come to my notice is described with excellent illustrations, and all the remedies that have been found profitable, fully considered. Of course, we are not yet able to control entirely all this fungi—the pear-tree blight, for instance. We are told that, so far, science has failed with this, but that decidedly beneficial results are obtained by cutting out the blighted limbs or twigs, and burning them just as soon as the trouble appears. Years ago my mother succeeded in raising beautiful pear-trees by the above method. She said she was not going to have her trees ruined by that disagreeable-looking blight; and by cutting it out and putting the twigs in the stove just as soon as she could discover it, she made our trees healthy and productive. Well, the book considers this whole matter, from the dry rot on the plum-tree to the smut on the corn, the scab on the apple, the anthracnose on the raspberry, the club-foot of the cabbage and cauliflower, the strawberry rust, and even scabby potatoes. Many of these fungi, I believe, we have got pretty well in hand. The book contains 220 pages and 90 illustrations. Price, bound in cloth, \$1.00; paper, 50 cts. We can mail it from this office if desired.

HOW TO PREPARE AND SHIP COMB HONEY.

The time is near when we hope many of our readers will have a good crop of honey to market. Your success in securing a fair price depends very large-